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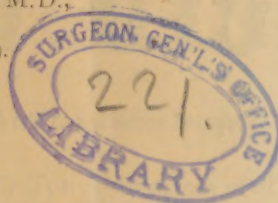
INFANTS' AND INVALIDS'
CEREAL FOODS

UNDER THE MICROSCOPE.

BY

✓
EPHRAIM CUTTER, A.M., M.D.,

OF NEW YORK (LATE OF BOSTON).



Extract from the address of Dr. Abraham Jacobi (Professor of Diseases of Children in the College of Physicians and Surgeons, N. Y.), as President to State Medical Society of New York, Feb. 8th, 1882:

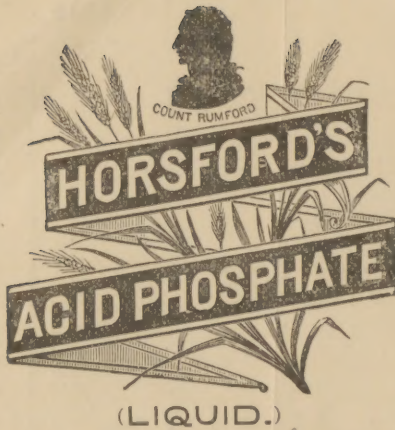
"I wish this article could be distributed in a hundred thousand copies, reprinted in every secular paper, read from every platform and pulpit of the land. For it is time that fraud should be stopped and a nefarious trade suppressed."

(From the American Medical Weekly.)

PUBLISHED BY E. S. GAILLARD, A.M., M.D., LL.D.,

NEW YORK, 1882.

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FORMULA.

EACH FLUID DRACHM CONTAINS

- $5\frac{1}{2}$ grains free Phosphoric Acid (PO_5)
- 3 grains Phosphate of Lime (CaO PO_5)
- $\frac{1}{2}$ grain Phosphate of Magnes (MgO PO_5)
- $\frac{1}{6}$ grain Phosphate of Iron ($\text{Fe}_2 \text{O}_3 \text{PO}_5$)
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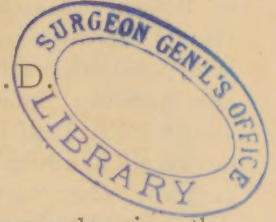
SEND FOR DESCRIPTIVE CIRCULARS.

INFANTS' AND INVALIDS' FOODS,

BY

EPHRAIM CUTTER, A.M., M.D.

246 WEST 44th ST., NEW YORK.



HIGHLY IMPORTANT AND EXTENSIVELY ADVERTISED CEREAL FOODS UNDER THE MICROSCOPE. THE GENUINE; THE SPURIOUS; THE WORTHLESS AND THE FRAUDULENT. THERAPEUTIC, AS WELL AS DIETETIC FACTS OF GREAT VALUE TO PHYSICIANS AND THEIR PATIENTS. By EPHRAIM CUTTER, A.M., M.D., Harvard and University of Pennsylvania. Author of Bolyston Prize Essay, 1857; Delegate from Mass. Med. Soc. to U. S. Pharmacopœia Convention, 1860; Hon. Mem. California and New Hampshire State Medical Societies; Associate Member Philosophical Society of Great Britain and of the Société de Microscopie Belgique; Principal Med. Dept. Am. Institute of Micrology; Author of "The Clinical Microscope," and "Introduction to the Use of the Microscope," and of many Medical and Scientific Papers, etc., etc., etc.*

The great difference existing in the character and quality of cereal foods (wheat, corn, oats, rye and barley), offered for sale, has attracted the attention of all close observers. Some of these advertised "foods" are perfect and genuine; some are defective and injurious; while many are worthless in composition, and even fraudulent in preparation.

These demonstrable facts are highly important, of course, to physicians, who use such foods so largely and so well in the treatment of many diseases; but they are of equal importance to the members of every community. To mothers who, above all, are chiefly charged with the responsibility of the diet of their children,

and especially of those undergoing the suffering and dangers of teething; to fathers who, however busily engaged, are deeply interested in the safety and comfort of their families; and to the millions who, suffering from indigestion and dyspepsia, seek anxiously for relief and cure by the use of foods best adapted for their condition. To all of these, the truth in regard to foods, as revealed by that unerring teacher, the microscope, must be vitally important and interesting.

Fully appreciating the great importance of having demonstrated, to the Public the unquestionable truth in regard to the exact value of cereal foods, showing which foods are genuine and which defective, Dr. E. S. Gaillard (of this city) the editor of "GAILLARD'S MEDICAL JOURNAL, and of the "AMERICAN MEDICAL WEEKLY," requested me to examine, microscopically, all of these foods, and to report the results for publication. This request was made in April, 1881, and the examinations described have been carefully made during the eight months which immediately elapsed. The examinations were made by me personally, and the microscopic drawings were made in my office, and under my supervision, by Dr. A. T. Cuzner of this city, one of the most competent, faithful and skilled artists in this department of scientific art. The drawings prepared by him were photographed on the plates used in these illustrations, by the Moss Photo-engraving Company, N.Y., and the results are all herewith presented.

All cereal foods (wheat, oats, corn, rye and barley) contain almost exclusively gluten and starch.

Gluten is the viscid, tenacious substance

of dough, and in addition to its highly valuable, nutritious property, is essential in all panification or bread making. Gluten, says Magendie, the immortal French Physiologist, "by itself secures complete and prolonged nutrition." Pereira, the great authority, says, "gluten is easy of digestion, and substances which contain it largely are readily digested even by invalids and dyspeptics. It is alone capable of securing prolonged nutrition."

Starch is too well known to need description. "It is incapable alone of sustaining life."

If a grain of wheat, as a type of other cereals, be examined, there will be found, first, the outer middle and inner coats, forming together the husk or bran; these coats are wholly destitute of nutritious properties. Next in order comes a layer of cells, or sacs, crowded together and lying in irregular shapes; these sacs averaging $\frac{1}{16}$ of an inch in diameter, contain gluten, with a little oil and albumen. The gluten is in the form of small granules, $\frac{1}{10000}$ of an inch in diameter, and, when a sac is ruptured, these adhere to each other (are glued together) with great tenacity. Lastly, in the centre of the grain, packed away in cells or sacs, is the starch; also in small granules. These sacs or cells are in the form of oval globules, and when ruptured, as is done by boiling or cooking, the inside contents escape, forming a glutinous mass, in which, under the microscope, are seen the broken sac membranes in crescentic and irregular shapes.

These grains with the coats and cells or sacs, are accurately given in figures 1, 2, 4, 5 and 6. (Cut 3 is similar to cut 2.)

The reader has here a clear insight into the rationale and the reliability of the examination of cereals, under the microscope.

The foods examined and described are as follows: 1, Common Flour; 2, Imperial Granum; 3, Ridge's Food; 4, Horlick's Food; 5, Mellin's Food; 6, Gluten Flour; 7, Franklin Mills Entire Wheat

Flour; 8, Arlington Wheat Meal; 9, Crosby's Food; 10, Blanchard's No. 1 Gluten; 11, Blair's Wheat Food; 12, Nestle's Milk Food; 13, Babysup, No. 1; 14, Baby sup, No. 2; 15, Redmond's Cerealine; 16, Anglo-Swiss Milk Food; 17, Durkee's Glutena; 18, Farwell's Gluten Flour; 19, Victor's Baby Food; 20, Bermuda Arrow Root, from the Plant; 21, Taylor Brothers, London, Pure Bermuda Arrow Root; 22, Minnesota Surprise Flour (new Process); 23, Trade Dollar Process Flour; 24, Hubbell's Prepared Wheat; 25, Mother's Cereal Milk Substitute; 26, Hawley's Liebig's Food; 27, Papoma; 28, Gerber's Food for Infants and Children; 29, Gerber's Milk Food; 30, Cold Blast Flour Extra, New York Health Food Co.; 31, Barley Flour Extra, New York Health Food Co.; 32, Buckwheat Flour; 33, Indian Wheat Flour; 34, Lost Nation Wheat Flour; 35, Corinna Wheat Flour; 36, St. Paul Wheat Flour; 37, Hazleton Wheat Flour; 38, Puritan Wheat Flour; 39, Patapsco Wheat Flour; 40, Underwood Wheat Flour; 41, Fine Granulated Wheat Flour; 42, Cold Blast Whole Wheat Dark Flour; 43, Crude Gluten Flour; 44, White Gluten Flour.

Do these foods sustain their claims?

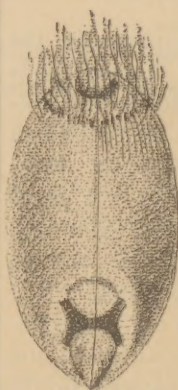


Fig. 1.



Fig. 2.

Figures 1 and 2 represent a grain of wheat. Note the beard, the longitudinal groove and the germ.

Fig. 4. This figure is from Horsford's report on bread, at the Vienna Expositi-

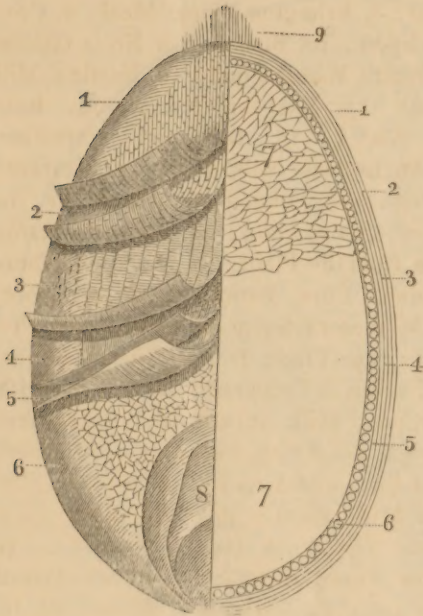


Fig. 4. After Hand.

tion. It represents a longitudinal section of a grain of wheat: 1, outer coat; 2, middle coat; 3, inner coat; 4, color coat; 5, gluten coat; 6, gluten cells; 7, parenchyma, or starch mass; 8, the germ; 9, hairs of beard.

Fig. 5. This figure represents a transverse section of a grain of wheat. Note the different coats; the envelope coats; the gluten coat (dotted) and the starch masses within forming bundles.

Fig. 6. Portion of a transverse section of a grain of wheat; shows empty and filled gluten cells; starch masses in the interior with the tough, fibrous envelopes or coats. The reader should learn here to identify the large gluten cells, empty and filled, forming the third coat. The shape of these cells should be remembered, for it is upon the gluten in cereal foods that their chief value depends.

Fig. 7. Common wheat flour, magnified 800 times. A, giant starch cells; B, medium starch cells; C, starch granules, aleurone (or farina), and granular gluten from ruptured gluten cells; D, starch bundles and fibrous tissue; E, fibrous tissue. There are no gluten cells, these being ruptured, liberating the granules of gluten.

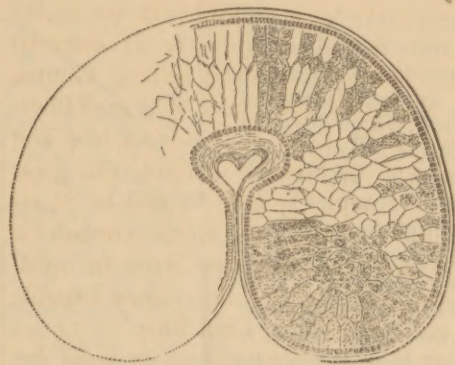


Fig. 5. After Hand.

In making flour, three-fourths of the gluten is removed, and the chief strength of the food is thus destroyed.

Fig. 8. Transverse section of a scale of bran magnified 150 diameters. This bran is removed to make flour white, and this removal is the cause of the loss of three-fourths of the gluten. Note the gluten cells, thickly packed away in the bran. The removal of the bran, it is thus demonstrated, is the removal of the gluten.

Fig. 9. THE IMPERIAL GRANUM FOOD. This food is represented to be gluten from white, winter, flint wheat. The starch impurities and soluble matter effectually excluded. The gluten only retained, etc. There are no gluten cells visible. Note the giant starch grains (A); B, granules of starch and aleurone; C, connective tissue; D, granular gluten. I have always failed

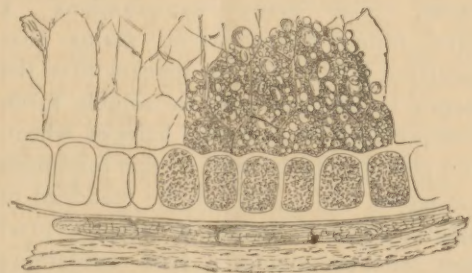


Fig. 6. After Hand.

to find gluten cells. *It ranks only with common flour.*

Fig. 10. RIDGE'S FOOD, magnified 800 times. It is claimed to be "a perfect food for infants." It contains no gluten cells. Observe the beard of the wheat at A; B,

wheat starch mass; C, starch bundles, apparently of maize; D, cooked mass of starch, which does not polarize light; E, starch grains; F, starch granules; G, small gluten granules. *The proprietors must add gluten cells, at least in the proportion found in wheat or maize, to bring their product up to the standard of wheat flour.*

Fig. 11. HORLICK'S FOOD; magnified 800 diameters. The starch that makes up the bulk of the food is changed into dextrine, or sugar, hence it is soluble. A, cooked, vegetable granular mass; B, hair of wheat; C, empty and filled gluten cells, found only after a long search through several specimens. The dark unsightly masses are portions of cooked material, that have no effect on polarized light. Claims "to be a perfect food for infants." *It approaches common flour.*

Fig. 12. MELLIN'S FOOD.—Presents gluten cells, hair of wheat, but not in large quantity, with pieces of tegument, and amorphous granular matter. The claim of this food is that it is not farinaceous. In many examinations I have found a few starch grains that polarized light. But it appears that the starch is changed into a soluble form. The presence of tegument, hairs of wheat, and gluten cells shows that this food does not ignore the claims of the standard of nature. While it may be a chemical question whether giving a food containing

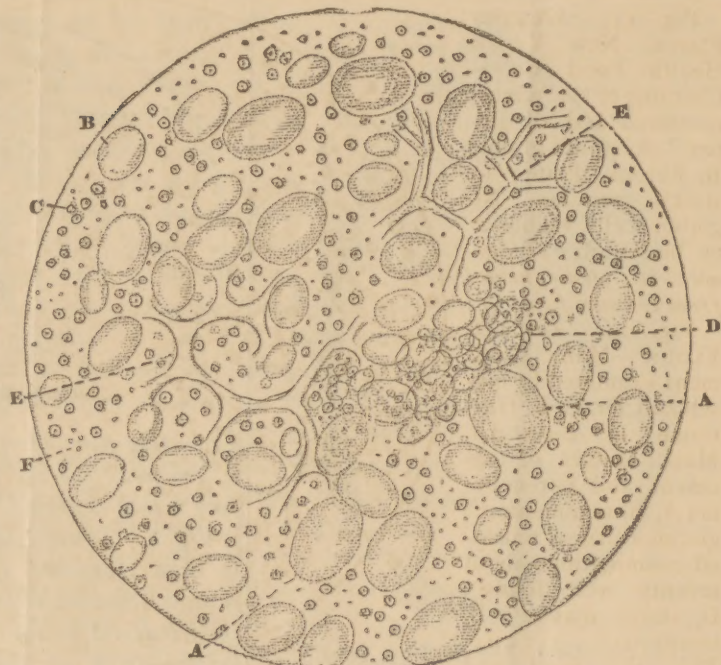


Fig. 7.
Common Wheat Flour.

starch that has been converted into a soluble form, is not the same thing as giving the starch itself, so far as the ultimate nutrition is concerned, still there is an advantage in having the starch all ready to penetrate into the circulation on its entrance into the alimentary canal of a defectively digesting person, rather than to have the starch undergo the change from the colloid form to the crystalloid form after it reaches the alimentary canal. Comparing the figure with that of the food No. 2 in our list, it will be seen that the starch has been almost converted to a soluble form. I place this food very high on the list of prepared infants' foods, as it contains gluten cells easily visible on inspection with the microscope.

I would not go so far as to agree with the advertisement that "it is the only genuine substitute for mother's milk," but from my point of view it technically sustains its claims. Only I would suggest the introduction of more gluten cells, so as to approach nearer the normal proportion of the gluten and starch found in the natural cereal. Magnified 800 diameters.

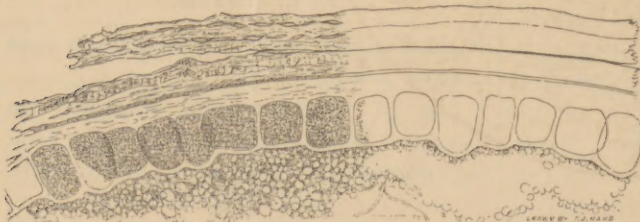


Fig. 8. After Hand.

Fig. 13. GLUTEN FLOUR, New York Health Food Co.—Claiming to be, “almost no starch and all gluten.” A, starch grains; B, fibrous tissue; C, starch granules. No gluten cells visible or to be found. *It cannot be distinguished from common flour.*

Fig. 14. GLUTEN FLOUR.—Many specimens examined by myself and Dr. G. B. Harriman of Boston, Mass. Masses of tegument and parenchyma A, B, tegument; C, gluten cells; in repeated examinations about seventy were found; D, starch masses; E, connective tissue. This is a meal, and not a flour. The circulars are travesties, and show an ignorance which, if it did not affect human life, would be ridiculous. *Where only seventy gluten cells are found in a flour claimed to be all gluten, comment is unnecessary.*

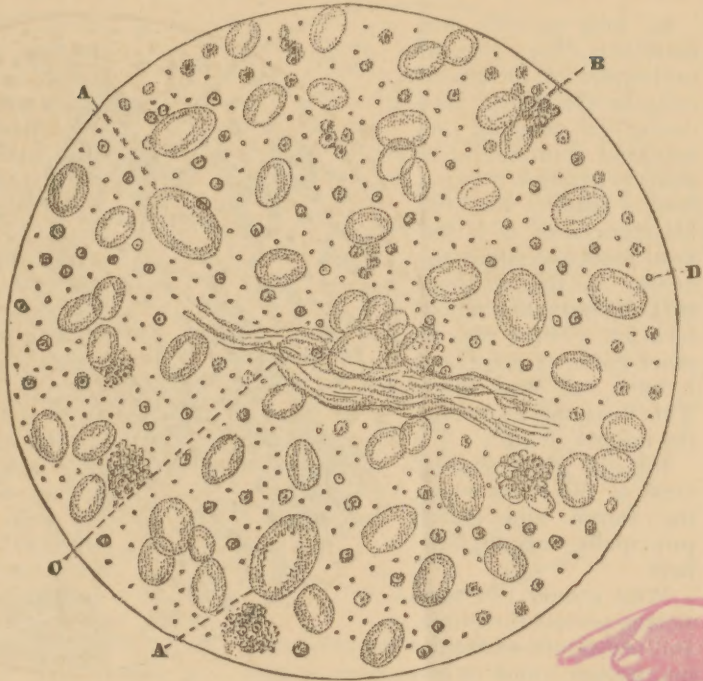


Fig. 9.
Imperial Granum.

Fig. 15. ENTIRE WHEAT FLOUR, manufactured by the Franklin Mills Co., Lockport, N. Y., obtained of Mr. T. R. Beardsley, Mill Agent, 77 Warren St., New York. Fig. 15 shows a field of this flour. It is

filled with gluten cells as any one can see from what precedes. It is a beautiful representation, crossing are two hairs of the beard. The view is from without inwards, the manufacturers having removed the four outer coats of the integument of the grain, so that here we have the 5th and 6th coats retained, and yet at the same time, a good flour is produced which gives a light, spongy and delicious bread. This is the perfection of milling, though it would be incorrect to say that this perfection of milling has been entirely attained in this case, still it is the best I have examined, and stands at the very forefront of flours. Of late the process has improved, so that it contains more gluten cells than at first.

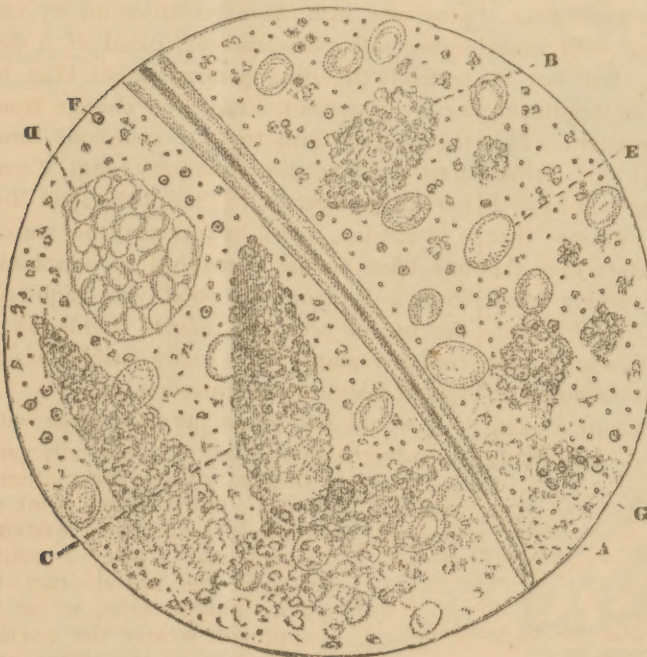


Fig. 10.
Ridge's Food.

So long as this firm maintains the present proportion of the gluten cells to the starch, they confer a blessing on mankind. For about five cents per pound, they put forth a product that fulfils the claims of a real flour food, and comes the nearest to the standard that all flours should conform to. There may be other flours as good, but I have not seen them. This flour makes a reliable infants' food.

Fig. 16 gives another view of this flour where the starch and gluten principally occupy the field.

Why should not physicians protect the public and test flours under the microscope, and when such a flour as this is met with, containing a reasonable amount of gluten cells, encourage its use? Also when any deviation from the standard is found report it?

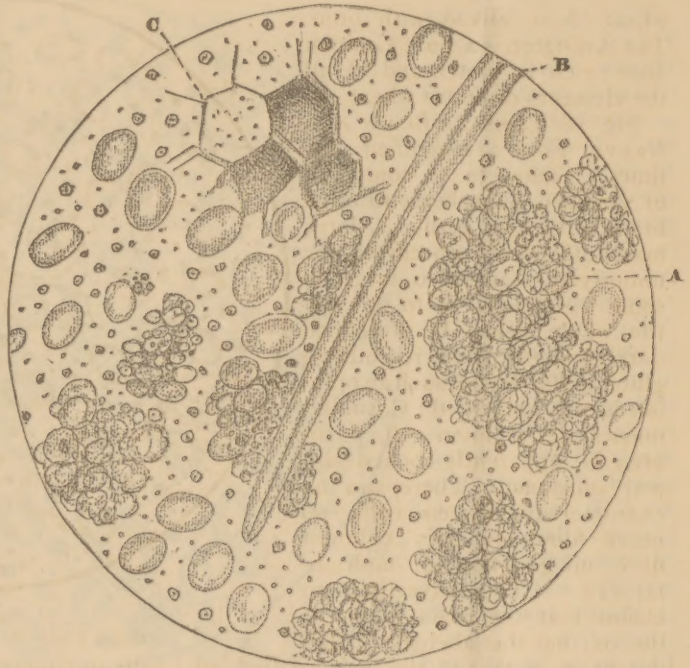


Fig. 11.
Horlick's Food.

I really hope the time is coming when microscopes will be as common in houses as pianos and sewing machines, so that school children will learn for themselves the value of these lessons and how to detect the gluten cells under the microscope.

Fig. 17. ARLINGTON WHEAT MEAL; magnified 800 diameters. A, tegument of wheat with gluten cells around and underneath; B, tegument, with no gluten cells; C, fibrous tissue with contiguous starch cells and aleurone, and granular gluten in the interspaces. "Meal" is the product of a cereal ground coarsely, without bolting. Wheat thus ground is often called Graham Flour, after Dr. Sylvester Graham the noted vegetarian. A spurious Graham is

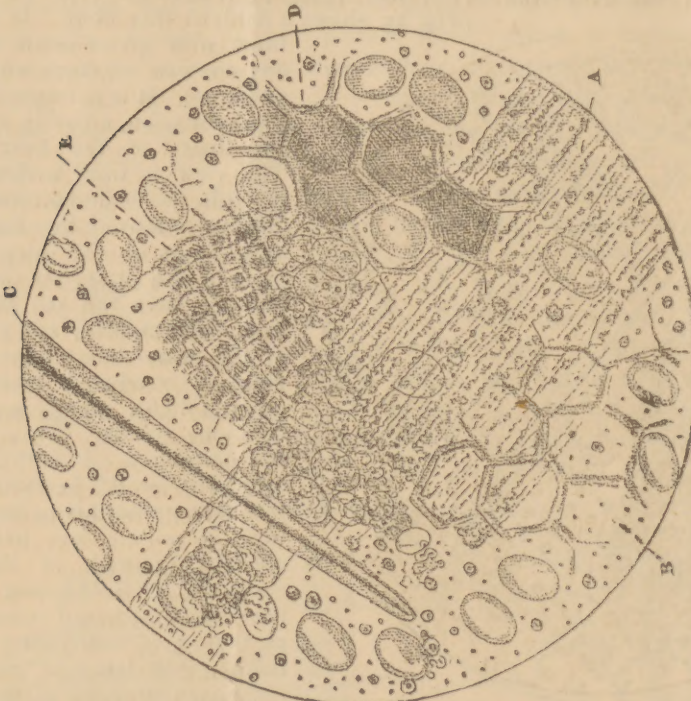


Fig. 12.
Mellin's Food.

wheat flour mixed with bran. The Arlington is a pure Graham flour; rich in gluten and in all the elements of entire wheat.

Fig. 18. CROSBY'S BRAIN AND NERVE FOOD; magnified 800 times. Claims to be composed of vitalized phosphates from ox brain and wheat germ. A, large mass of starch, obscuring the underlying starch; so large in some specimens as to occupy the whole field; B, ill-defined dark granular mass resembling gluten cells; though such an opinion is not warranted; C, similar masses; E, a gluten cell, possibly; D, apparently cooked animal substance. There are no characteristic gluten cells, no nerve fibre, no axis cylinder fibre, no ganglion nor multipolar cell. The advertisement claims that the brain is that of the ox, but the label states that the brain is that of the fish. Label admits 730 parts of starch in 1,000. Claims some gluten; if this exists, it is the granular gluten of common flour. There are 270 parts of so-called vitalised salts asserted to be in this food; that is

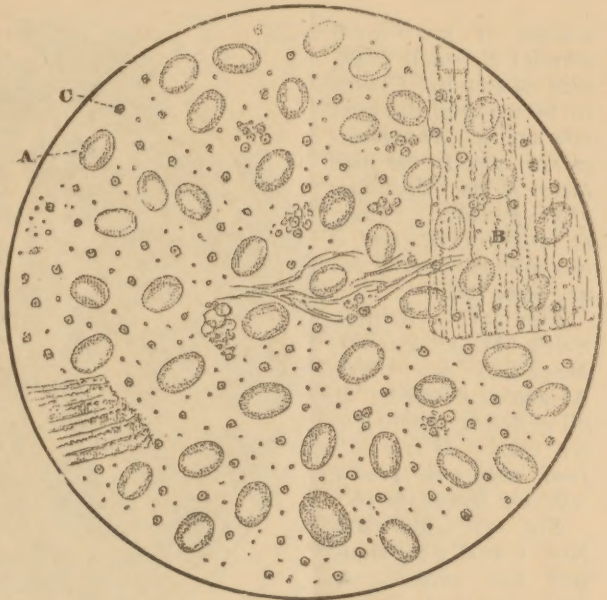


Fig. 13.

Gluten Flour—N. Y. Health Food Co.

salts in connection with the organic substances named. If this be so, all the albumenoids in all the foods herein described are vitalised also. There is but little gluten if any in this food.

Fig. 19. BLANCHARD'S GLUTENA; magnified 800 diameters.

Claims to contain 90 per cent. of gluten; starch only 10 per cent. A, large mass of starch, polarises light beautifully, showing that the starch is not cooked or overheated; B, gluten cells. Gluten abundant; contains all the elements of wheat. While there is gluten always found, this food contains 90 per cent. of starch, and only 10 of gluten; the reverse, exactly, of the claim made for the food.

BLAIR'S WHEAT FOOD. —Well represented by figure 9. Abundance of free starch grains, giant, medium and granular. No gluten cells.

Fig. 20. NESTLE'S MILK FOOD; OR, LACTEOUS FARINA.—Magnified 800 diameters. A,

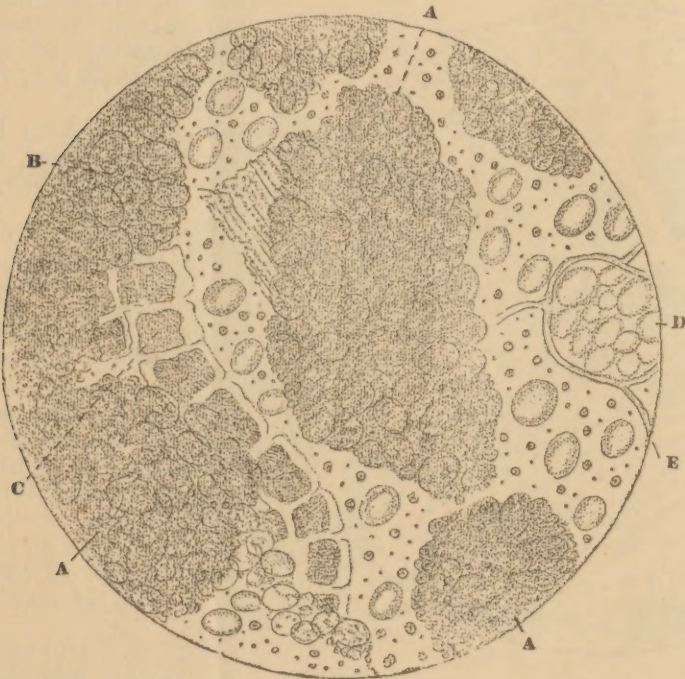


Fig. 14.
Gluten Flour.

masses of cooked starch; B, small granules of starch. Claims to be made of the best cow's milk. *It contains starch, and in the field there is an abundance of oil globules. There is milk in it, and a quantity of starch, but no gluten cells.*

Fig. 21. ANGLO-SWISS MILK FOOD. Magnified 800 times. A, starch cooked; B, oil globules; some gluten cells. *It is a milk food, with some gluten, cells and cooked starch.*

Fig. 22. Babysup, Nos. 1 and 2; magnified 800 times. A, large masses of oat gluten cells, notice how they differ in size from the wheat gluten cells; B, starch bundles; C, granular starch. There are three grades prepared for infants of different ages; No. 1, for the youngest. This food is a malted preparation. Contains all of the

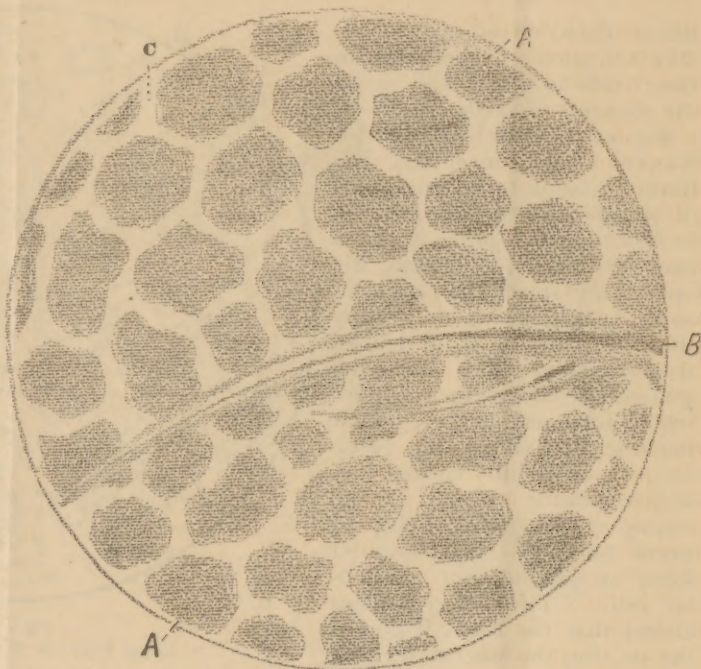


Fig. 15.
Franklin Mills Entire Wheat Flour, Lockport, N. Y.

elements of the oat; an abundance of gluten. Starch grains much smaller than those of the wheat, and the gluten cells of characteristic size. This food is made of unhulled oats malted and crushed. See figures 23 and 24. *Sustains its modest claims.*

Figures 23 A-23 B. The oat as found in examinations of Babysup.

Fig. 24. REDMOND'S CEREALINE; magnified 800 times. Polarises light partially only. Made up of wheat starch grains. Bundles few. After many examinations, a portion of tegument was found, containing all coats, and 50 gluten cells. *Claim of being economical (50 cents a pound) superiority to all other cereals, etc., not sustained.*

Fig. 25. DURKEE'S GLUTENA; magnified 800 times. A, masses

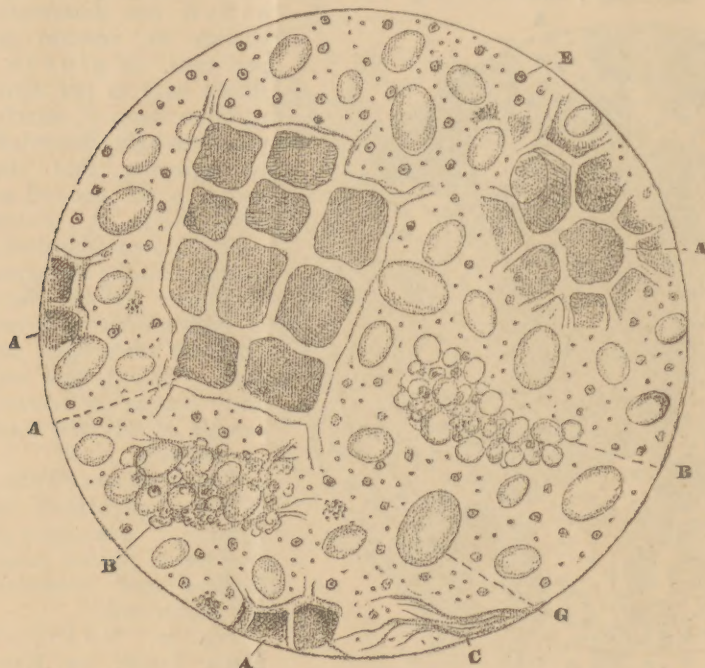


Fig. 16.

Franklin Mills Entire Wheat Flour, Lockport, N. Y.

of the parenchyma of wheat grain, starch removed; here and there a strip of gluten cells outside. Beautiful starch grains and granular starch. *Figure 7 represents this food when crushed. Gluten cells not detected.*

FARWELL'S GLUTEN FLOUR.—Claims to be "gluten left behind after the starch is blown out." It required a long search to find any gluten cells. It is similar to the food last named, and figure 25 is a good representation of it.

Fig. 26. **VICTOR'S BABY FOOD**; magnified 800 times. Claims "a close resemblance to Mother's Milk." A, large mass of cooked starch; B, starch grains deformed by cooking; C, broken starch cell; D, fibrous tissue, one gluten cell, occasional fat globules. Figure shows starch grains

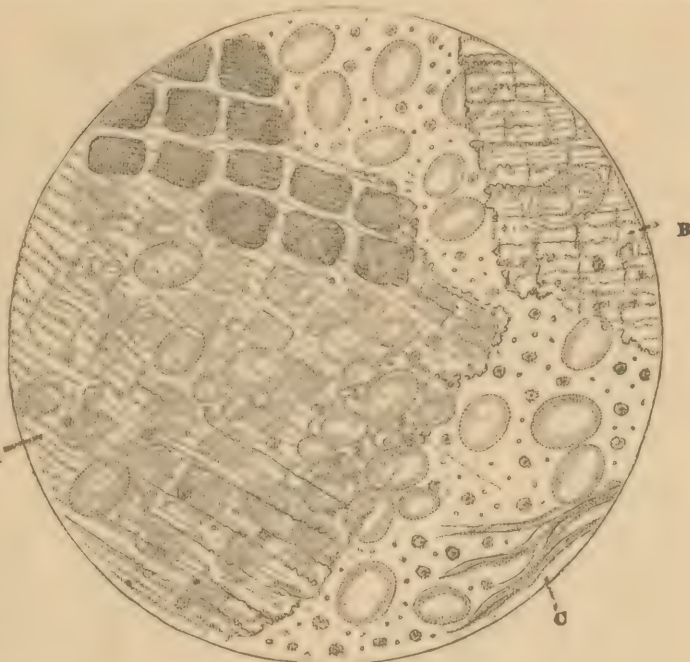


Fig. 17.
Arlington Wheat Flour.

broken up into weird, irregular crescentic shapes, due to the mechanical crushing after cooking. *It is like cracker and biscuit ground up.*

Fig. 27. **BERMUDA ARROW ROOT STARCH**, from the pure and genuine Bermuda Arrow Root, magnified 800 times.

Fig. 28. "The Pure Bermuda Arrow Root of Taylor Brothers." *Potato starch cells are here commingled with a few of arrow root; the adulteration is beautifully exposed, and the claim of purity is comical indeed. The manufacturers should examine these arrow root cells and their starch product under the microscope!*

MINNESOTA SURPRISE FLOUR.—This contains all the elements of the wheat, save the gluten cells. There is more granular gluten than is

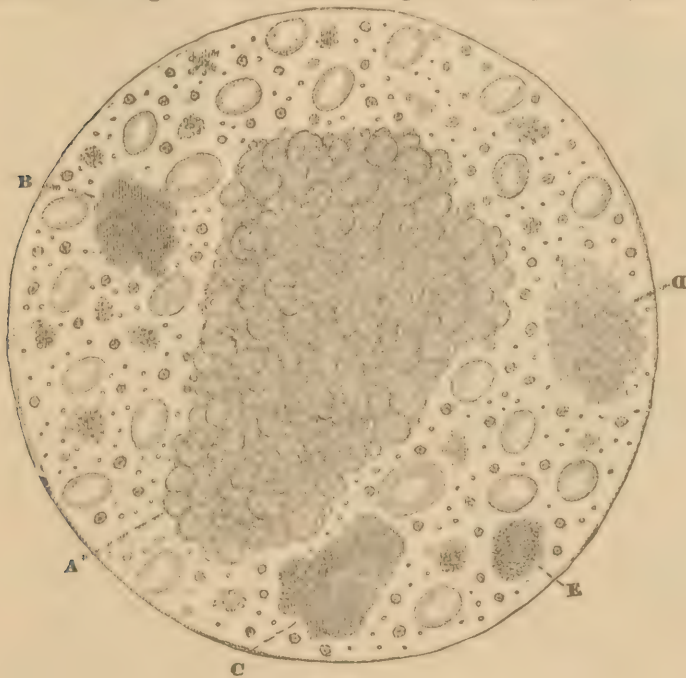


Fig. 18.
Crosby's Brain and Nerve Food.

found in ordinary flour.

TRADE DOLLAR NEW PROCESS FLOUR, like the last.

HUBBELL'S PREPARED WHEAT.—Starch cooked, but not quite enough to prevent polarization of light; starch-bundles and aleurone, *many* gluten cells. *Is up to its claim.*

MOTHER'S CEREAL MILK SUBSTITUTE. The claim made shows that the manufacturers are profoundly ignorant of the mechanism, construction and chemical elements of the cereals they describe and sell. Their language is not only unwarranted by scientific truth, but is absurd. They speak of "the chemical salts being separated by mechanical means," etc., etc. Their preparation, nevertheless, is a good one, and contains more of the elements of wheat than was anticipated. It contains gluten cells, bundles of wheat starch, barley starch, and gluten granules.

HAWLEY'S LIEBIG'S FOOD.—Wheat glu-



Fig. 19.

Blanchard's Glutena.

ten cells, barley gluten cells, barley tegument, wheat starch, cooked granular masses, not polarizing light. Well malted. *A good food, and its claims are sustained.*

THE FOLLOWING ADVERTISED FOOD

STUFFS CONTAIN NO GLUTEN CELLS: Cold Blast Flour, N.Y. Food Co.; Barley Flour, do.; Buckwheat Flour, do.; India Wheat Flour; Lost Nation Wheat Flour; Common Minnesota Flour; Hazleton Flour; Puritan Flour; Patapsco Flour; Underwood Flour; Fine Granulated Wheat Flour (30 gluten cells); Gerber's Food for Infants and Children (seems to be crackers ground) and resembles figure 20. Gerber's Milk Food is like Nestle's; no gluten cells.

The Medical Profession should create an accurate public sentiment in regard to cereal foods. All of those which contain no gluten cells lack the chief, nutritive element of the grain. The microscope is an infallible detector of

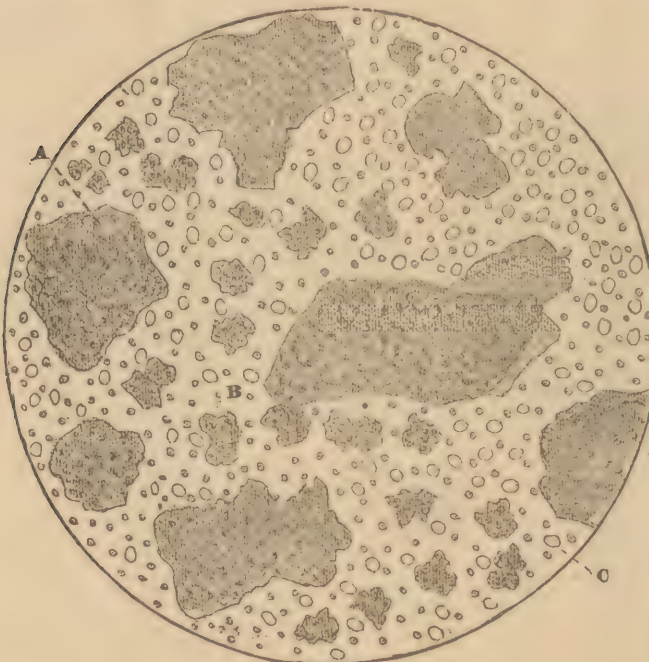


Fig. 20.

Nestle's Milk Food.

fraudulent morphological claims in regard to cereal foods. The proportion of starch to gluten is easily demonstrated, and the absence of gluten cells is easily exposed. In all white breads there is no bran; and if the bran is excluded, such flour is deprived of its gluten cells; the gluten cells being deposited in the bran. See figures 4, 5, 6 and 8. The chemist's balance and the compound microscope teach the truth, and if the truth is not told in regard to advertised cereal foods the imposition can always be detected. These simple facts and absolute facts should be universally known.

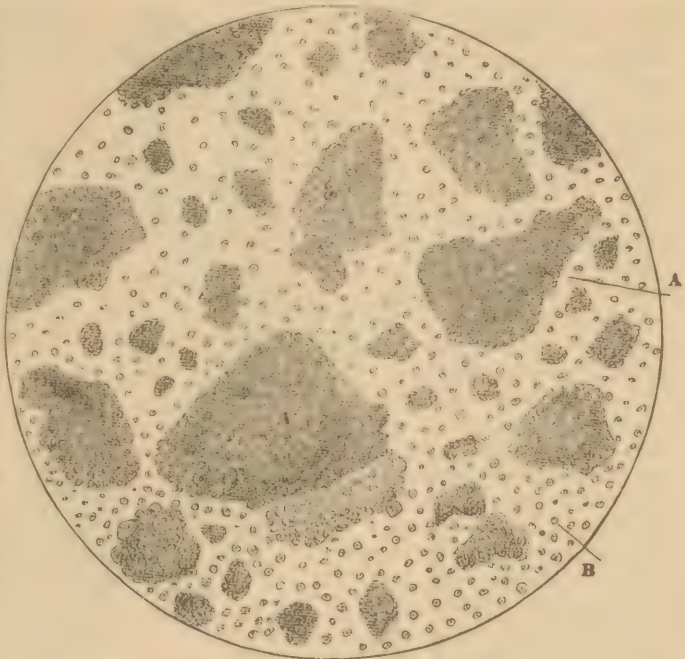


Fig. 21.
Anglo-Swiss Milk Food.



Fig. 23a. 8 diameters.
Oat, minus hull.



Fig. 23b. 6 diameters.
Oat hull crushed.

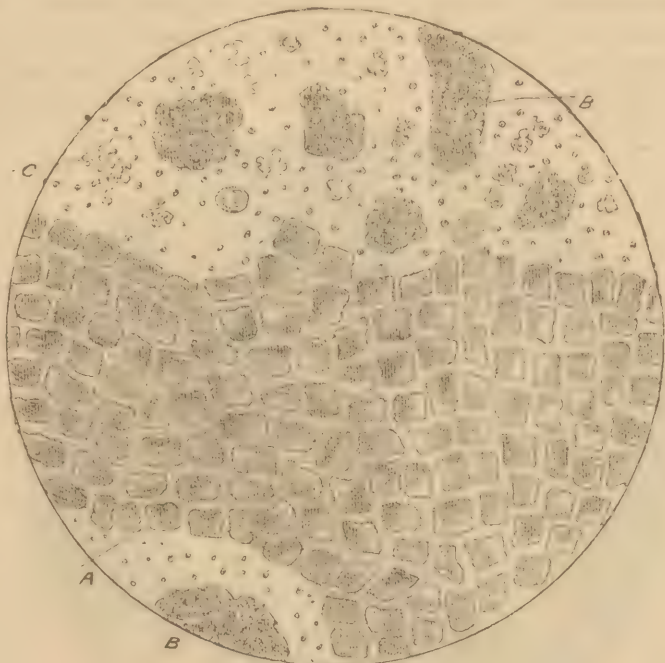


Fig. 22.
Babysup—Nos. 1 and 2.

SUPPLEMENT—

KEASBY & MATTISON'S INFANTS' FOOD contains no gluten cells. It consists of grape sugar and dextrine (converted starch) and is claimed to contain alkaline

phosphates.

SAVORY AND MOORE'S FOOD.—Appears the same as common flour.

MEAD'S HULLED WHEAT FLOUR.—First, second and third coats generally re.

moved; fourth, fifth and sixth coats, usually found—a coarse flour or meal; does not polarize light well. Preparation good and deserves support.

SUMMARY BY THE EDITOR.—Having disposed of the microscopic analysis of the cereal foods, in detail, it is necessary to add a few important facts, in order that each reader may be enabled to form clear and intelligible conclusions.

In taking a comprehensive view of all the foods known to civilized man, it may be positively stated that such foods can be classified into two large groups; and there are no known foods which do not properly belong to the one or the other of these two great classes. These groups are the nitrogenized and the non-nitrogenized foods; or the foods which contain nitrogen as an element of their composition, and those in which no nitrogen is to be found. The non-nitrogenized group of foods consists of those

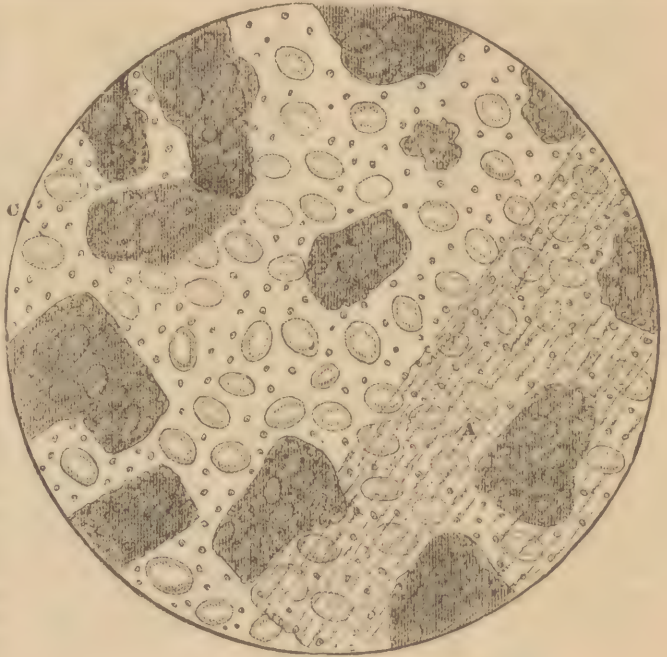


Fig. 24.
Redmond's Cerealine.

which contain starch, sugar, or fat. The nitrogenized foods are those which do not contain starch, sugar or fat. This last group is made up of the immense varieties of food, in which there is no fat, starch or sugar.

Having learned these facts, it is proper to determine the relative value of the foods which make up these two great groups, viz: the relative value of nitrogenized and non-nitrogenized foods.

The simplest manner of presenting this most important subject is to assert, as a well established fact, that while the non-nitrogenized foods, the starchy, saccharine and fatty foods, are almost solely effective and solely intended for the purpose of maintaining animal temperature, the nitrogenized foods are consumed in repairing the natural wear and tear of all of the true tissues of the body. While animal temperature, however, may be maintained in those who subsist on an exclu-



Fig. 25.
Durkee's Glutena.

sively nitrogenized diet, repair of tissue waste cannot be effected in those who consume only the non-nitrogenized foods. To be more explicit and comprehensive, it may safely be asserted, that man can live, and maintain a vigorous existence, on an exclusively nitrogenized diet; while on a diet of non-nitrogenized food exclusively, he is unable to maintain life; such a diet being fatal, if persistently and exclusively adopted.

It is well known, from actual experiment, that an animal may be fed to such an extent on fatty foods, that the hairs on the body are actually infiltrated with oil, and yet, in a well known period of time, the animal is sure to die. The result with a saccharine diet is exactly similar; while with a starch diet, though the fatal result is somewhat longer postponed, it is none the less

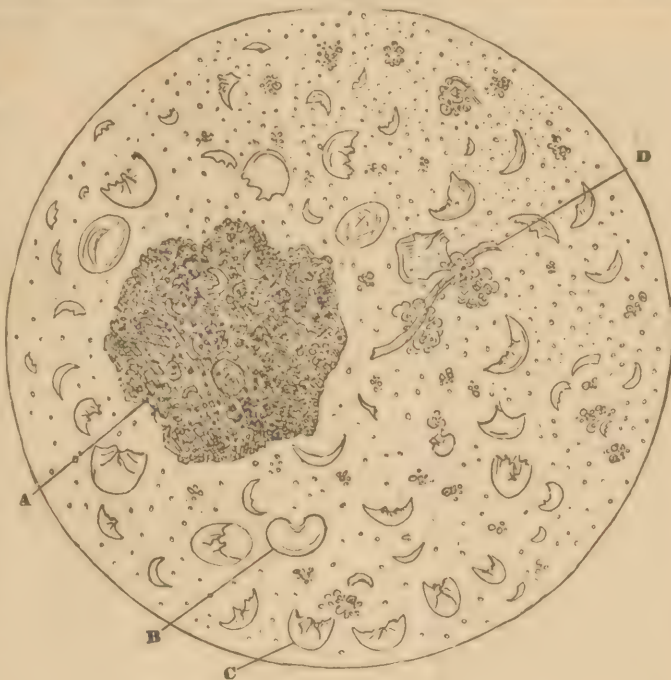


Fig. 26.
Victor's Baby Food.

sure to occur. A prominent and well known physician in this city, who undertook to ascertain how long he could maintain life without serious suffering on

a diet of gum and starch, has, though this diet was soon abandoned, never recovered from the effect of his rash experiment. While twenty-five years have elapsed since the endurance of his self-imposed ordeal, his heart to-day beats thirty per cent. faster than it did previous to his experiment. No facts in science then are better established than those in regard to the comparative and relative value of different kinds of food.

If these facts be applied to the study of the cereal foods, it is only necessary to remember that the gluten of such foods is their nitrogenized element; the element on which depends their life-sustaining value, and that this element

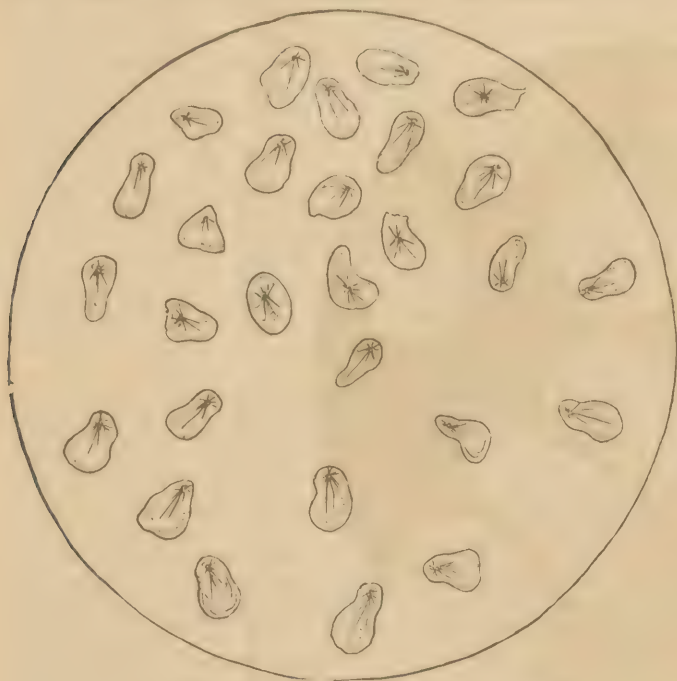


Fig. 27.
Genuine Bermuda Arrow Root.

is, in the white and foolishly fashionable flour, almost entirely removed; while the starch, the inferior element, is left behind, and constitutes almost entirely the bulk and inferior nutriment of such flours. To use flour from which the gluten (in the bran) has been removed is almost criminal; that it is foolish and needless needs no further demonstration.

In sickness, and in the sickness of infants especially, starch is highly injurious, while gluten is life-giving and restorative. Infants' foods should be rich in gluten, and contain the least possible proportion of starch. Those manufacturers and sellers of such foods who, while claiming to offer a food rich in gluten and free from starch, offer, on the contrary, an article consisting chiefly of starch and devoid of gluten are criminal in their fraud, and deserve the most unsparing condemnation.

The beautiful microscopic pictures in this article are therefore absolutely invaluable guides to all who seek to understand this most vital subject.

Of course, it will be said by all parties who represent foods not found to be as they are publicly represented to be, that these foods do contain gluten. Their claim is not denied; but if the proportion of gluten in such foods be far less than it is in ordinary wheat flour, is it not better for the patient to use ordinary flour than to buy cereal foods far inferior to flour in dietetic and therapeutic value, while financially their cost is very much greater; is indeed enormous? And if these cereal foods contain (as so many of them do) far less gluten than is to be found in ordinary wheat flour, is not the claim made for them not only untrue, but fraudulent in character?

With the text and illustrations here submitted, every reader can easily detect the defective or worthless or fraudulent foods offered for sale; and as the difference in these foods represents frequently the difference of life or death in those needing

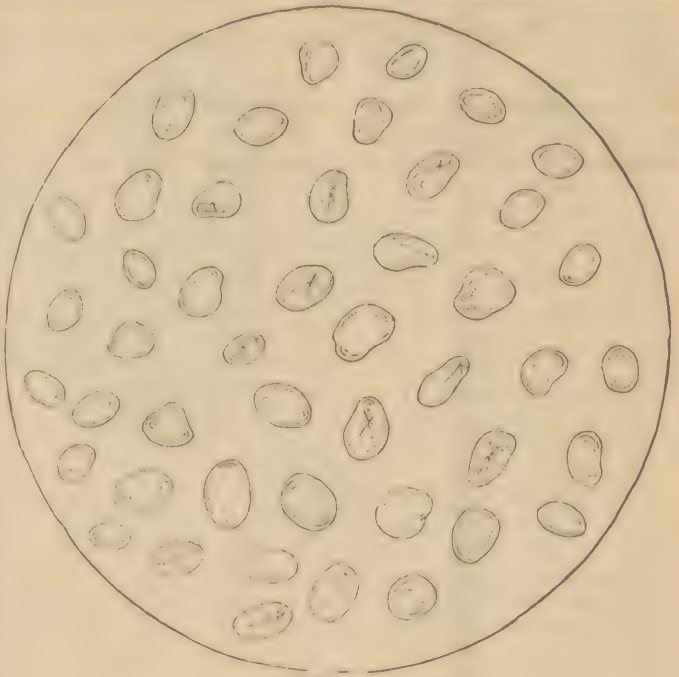


Fig. 28.

Taylor Brothers' Arrow Root.

them, the practical and scientific character of this paper is too evident to need demonstration or description.

It is almost criminal that such great questions, affecting the health and therefore the happiness and wealth of a Nation, should be left to the ignorance of the miller and the baker; to the foolish customs of society; to the equally foolish test of the mere appearance of bread; and to the fashionable restaurants and hotels. Manufacturers of foods for the sick, and, above all, for infants, should be held to the strictest accountability. It is the highest duty of the physician to learn the facts in regard to cereal foods, and to use such invaluable information for the benefit not only of the sick, but of the whole community.

This article will be followed, during the year, by equally practical and valuable articles on "what we eat and drink."—E. S. G.

The Medical Gazette is (ignorantly it is believed) giving to the public an advertisement of Horlick, in which his food is represented to have sustained creditably microscopic examination and recommended accordingly, while the facts are exactly the contrary of those represented.—E. S. G.

COLDEN'S LIQUID BEEF TONIC.

This preparation, consisting of the Extract of Beef (prepared by Baron Liebig's process), the very best Brandy that can be obtained, soluble Citrate of Iron, Cinchona, and simple Bitter Tonics, is presented to the profession for a trial of its claims. There are several preparations purporting to contain some of the above-named components, but the high cost of manufacture and the consequent reduction of profit, have caused the manufacturers to allow many such to deteriorate by the use of impure and cheap materials.

Physicians of large experience are growing to realize more and more fully the importance of preparing, in accordance with the principles of dietetics, the waste which disease entails; and those physicians are most successful in practice who recognize the fact that the true use of drugs is to restore to normal function the process of nutrition, on which life and health depend; and it has been a desideratum to obtain a preparation which could be given with a certainty of benefit.

We therefore present COLDEN'S LIQUID BEEF TONIC to the profession with a confidence inspired by a knowledge of its universal application in disease, and guarantee its purity and perfect assimilability.

We believe a trial will convince all—as it has already convinced many—that it is an invaluable aid to the physician.

Its benefit is particularly marked in lower states of the system, such as simple Anæmia, and that resulting from malarial poison, in chlorosis, spinal irritation, mental and nervous debility of over-worked business men, and especially in convalescence from protracted diseases. Its simple bitter principles act directly on the sentient gastric nerves, stimulating the follicles to secretion, and giving to weakened individuals that first prerequisite to improvement—an appetite. The Cinchona which it contains makes it indispensable in the treatment of the results of malarial disease, whilst its iron is a direct blood food, and its alcohol acts in the double capacity of assisting the local effect of the simple bitters upon the gastric mucous membranes, and also as a direct nervous stimulant.

It will thus appear that, unlike any preparation ever before offered, it combines properties of the utmost value in the treatment of such conditions as have been spoken of in this article. It is truly stimulant, tonic, nutrient and hæmatogenic, and is so palatable and digestible that the most sensitive palate and stomach will not reject it.

To conclude; this is not a new preparation, but one whose merits have long been acknowledged.

In a report of the celebrated physician, SIR ERASMUS

WILSON, of London, he says: "Several cases of incipient consumption have come under my observation that have been cured by a timely use of LIEBIG'S BEEF TONIC (COLDEN'S)."

We are in receipt of several hundred such commendations, but prefer, instead of introducing them here, to merely append an official analysis of the preparation, made by an eminent London chemist:

The following is a correct analysis of COLDEN'S LIEBIG'S LIQUID BEEF TONIC, perfected 3d January, 1868. I obtained the samples indiscriminately from the Company's Warehouse, Lower Thames Street, London, E. C. I find this preparation contains:

20 per cent saccharine matter.....	20
25 per cent glutinous or nutritious matter obtained in the condensation of the beef.....	25
25 per cent spirit rendered non-injurious to the most delicate stomach by the extraction of the fusel oil....	25
30 per cent of aqueous solution of several herbs and roots, among which are most discernible Peruvian and Calisaya Barks	30
Total.....	100

I have had the process explained by which the beef in this preparation is preserved and rendered soluble by the brandy employed, and I am satisfied this combination will prove a valuable adjunct to our pharmacopœia.

Signed. ARTHUR HILL HASSALL, M. D., F. R. S.
President of the Royal Analytical Ass., London.
RUSSELL SQUARE, London, W. C., 3d January, 1868.

Since the date of the above analysis, and by the urgent request of several eminent members of the medical profession, I have added to each wineglassful of this preparation two grains of SOLUBLE CITRATE OF IRON.

T. COLDEN.

N. B.—COLDEN'S LIQUID BEEF TONIC is sold by Druggists generally, in pint bottles. In prescribing or ordering our article physicians should be particular to mention "COLDEN'S"—viz.: Ext. carnis, fl. (Colden's). So guard against imitation, see fac-simile of T. Colden on bottle label.

I will send to ANY PHYSICIAN who will apply to me in person, or by letter (enclosing card), a sample bottle free of expense (except express charges), to any part of the United States.

C. N. CRITTENTON, Gen. Agent, No. 115 Fulton Street, N. Y.

FINE FLOUR

OF THE

Entire Wheat

IS THE

COMING FLOUR.

MANUFACTURED ONLY BY

The Franklin Mill Co., Lockport, N. Y.

American Granulating Process—No-Mill Stones Used.

It is made of the choicest Wheat obtainable—first denuded of the innutritious, woody outer husk (which is always present and a part of all Graham Flour or Wheat Meal), then reduced to an evenly fine and perfectly homogeneous flour, by a process wherein Mill Stones are not used, nor the product heated.

The **Gluten**, Mineral Salts and Phosphates of the Wheat, which are the properties so essential for the growth, maintenance and repair of the bones, muscles, nerves and working tissues of the human system, are preserved in their purity and natural proportions.

It Makes Delicious, Light, Spongy Bread, Gems, Waffles, Muffins, Doughnuts and Griddle Cakes. Can be used for all purposes the same as is White Flour.

The color of the Bread from our Fine Flour of the Entire Wheat is of a beautiful golden brown or bronze.

It is so rich in flavor, palatability, and nourishment, that only a few weeks regular use of it, suffices to make all other bread taste flat, insipid and unsatisfying.

Persons troubled with Dyspepsia, Indigestion or constipated Habit, will find perfect relief by using this Flour for their Bread diet, 30 days. In food value it is superior to any other Flour in the market of whatever name or manufacture. The claims are substantiated by the voluntary testimony of the ablest Scientists and Physicians who have personally tested its merits and publicly pronounced judgment.

(NOTE.—“Franklin Mills Entire Wheat Flour” Examined by Dr. Cutter and illustrated in Cuts Nos. 15 and 16 in article on “Cereal Food under the Microscope,” was manufactured by Franklin Mill Co., Lockport, N. Y.)

FOR INFANTS AND INVALIDS IT IS AN INVALUABLE FOOD, BEING EASY OF DIGESTION, PERFECT IN ASSIMILATION, AND HIGHLY NUTRITIOUS.

Put up in Bbls. and Half-Bbls. Retailed by Grocers in smaller quantities.

ASK YOUR GROCER FOR IT.

MILL AGENCIES ARE ESTABLISHED IN ALL THE PRINCIPAL CITIES.

Send for 8-page Circular, and name of nearest Mill Agent.

Address, FRANKLIN MILL CO., LOCKPORT, N. Y.

"Bread is the representative of human food, because wheat, of which it is made, embraces all the elements of nutrition necessary to build up and sustain every part of the system, keeping it in good working condition and preserving it unimpaired to ripe old age."

FINE FLOUR
OF THE
ENTIRE WHEAT
IS
THE COMING FLOUR.



FRANKLIN MILLS.

MANUFACTURED ONLY BY
THE FRANKLIN MILLS COMPANY,
LOCKPORT, N. Y.

Fine Flour of the Entire Wheat is superior to any Wheat Meal or "Graham" flour, because it does not contain any coarse, irritating bran particles, or indigestible husk of the wheat, which are unavoidably present and a part of all Wheat Meals and Graham Flour.

Put up in Barrels and Half-Barrels and Sold by Grocers in Smaller Quantities.

FOR SALE BY

WHAT IT IS.

IT IS NOT what is called or known as "Graham" flour, for that when best and honestly made, contains all the coarse, irritating particles of bran, and all the woody un-nutritious outer husk and fibrous brush of the wheat;—neither is it a white flour, because the mineral food-elements in wheat are dark, and a flour containing them cannot be white. It is wholly a new and distinctive product, differing from all other flours, be their names what they may. It is made from *sound and well-ripened wheat*, as *such wheat ONLY*, contains the *full complement of bone, muscle, brain and nerve food*. It is made by new and peculiar processes, specially designed for its production, and *without which its production is impossible*.

It is made to meet a great and rapidly increasing want in the experience, consciously or unconsciously, of every individual, and clearly to be seen in every family,—of *more nerve food*,—the lack of which and the call for which has never been greater. The stimulating character of our climate, the restless energy and nervous activity of our American people in all pursuits and professions, cause an enormous waste and wear of nerve force. This ceaseless strain pervades every walk of life, and characterizes even our pleasures as well as our business, and there is no let up until complete exhaustion, paralysis, heart disease or apoplexy abruptly calls a halt. There are probably some now and then who stop to think, as one of these milestones of sudden death or breaking down springs into view. But the great crowd rush along the highway, as heedlessly intent as ever. This enormous waste of vital force can only be met by the supply to the system of like vital food, and no product contains it so fully as sound plump wheat in its entirety. How completely and unerringly this *Flour of the Entire Wheat* conserves all the vital elements of the grain in their perfect purity, generously feeding the blood, and through it repairing and building up every fibre of the system and sustaining every function of life, will be more clearly shown in the illustrations and explanations which follow.

Preparatory to making the flour, the wheat is denuded or stripped of the thin, woody, indigestible husk, removing with it the fibrous brush on the small end of the kernel.

This operation may be likened, as to its anatomical character, to the thin skimming of an apple, so as to lay bare and not disturb or remove any of the interior food substance, as is shown in the illustrations. It is to this husk and its fibrous brush are attached the extraneous matter which comes from the harvest fields, such as spores of smut, and the eggs and larvæ of insects, and all external filth; and its complete removal frees the entire food part of the kernel from all contamination, rendering it perfectly pure and ready to be appropriated into the most wholesome and healthful flour. Again, the whole operation of flouring is done without millstones—no heating attends it; the product, in all stages of its reduction, is as cold as the wheat itself, and a flour results without any change taking place in even the most delicate of the chemical constituents of the wheat, and a food necessarily follows that is as natural, full and complete as the wheat itself.

None but thoroughly matured and well ripened wheat is used, in order to fully conserve in the flour the more vital food elements, in which shrunken and diseased wheats are deficient. These latter wheats are often used in unbolted flours, to make cheap flour, and the great bulk of the so-called Graham flour sold to consumers, is of this kind or nothing but low grade white flour mixed with bran. These practices are not only disreputable, but are disastrous to the health of consumers, and the injurious character of such concoctions and preparations of flour should be understood by consumers, and those engaged in their manufacture exposed and made amenable to the laws, as other adulterators of food are.

3 The so-called "Graham" flour, even when most honestly made, is a very objectionable food—few stomachs nowadays can cope with it. This comes from the presence in it of the bran in coarse particles, together with the innutritious, indigestible woody husk—conditions highly promotive of all the incipient ailments known and classed under the name "dyspeptic;" and its manufacture by millstones further detracts from its food value, by injuring the more delicate of the vital constituents of the grain.

It has been a theory that the mechanical, irritating action through the alimentary system of these coarse, rasping, bran particles in "Graham" flour were essential for the relief of constipated habit, but it is a false theory, and has been a prolific source of a vast amount of suffering and ill-health. This theory is rejected by physiologists and furthermore the use of this *Flour of the Entire Wheat* has completely disproved it, and repeatedly demonstrated that the cure of constipation comes from generously feeding the ganglionic nerve centers of the intestines, which preside over the functions of digestion.

Power does not originate nor reside in the muscles themselves, as is often ignorantly supposed; they are simply the means, or machinery to be operated, while the nerve force is the underlying power, like the steam supplied to the engine. Cut off the steam and the engine stops, and the wheels cease to run—lessen the supply of steam in any degree, and just in proportion the engine fails of its full performance. Cut off or lessen the nerve force, and just so far the system is lowered in vital tonicity and falls short of its best work.

Popular Ignorance of the Relative Food Value of Wheat and Flour.

While flour is so universal and important an article in the diet of the people, too few are sufficiently informed as to its real food value—and fewer still why, from the *very fact of its being white it is an impoverished food*.

The present generation were born and bred into the idea that the best flour must of necessity be the whitest. Long habit and use has strengthened this notion into a deep rooted prejudice, which has been recognized and catered to for years past by commercial usage, and the direction given to milling improvements, which have chased out of flour about everything possessing the more vital food properties, because of their color.

In the popular appreciation, a kernel of Wheat, in its structure and food composition, is the same all through—like a potatoe or chestnut, for instance—having a skin or shuck which is better to feed to animals than to throw away; and that differences in flour arise not so much from any essential difference in food value, as from the skill used in milling in keeping any particles of the wheat having any color out of the flour—the greatest skill, therefore, producing the whitest.

This all comes from lack of knowledge, first, of the really wonderful structure of the wheat kernel; second, ignorance of the fact established by modern chemistry, that the fifteen or more elements found in the human system are also found, and in about the same proportions, in a matured wheat kernel; third, further ignorance of the fact that these varying elements are not distributed alike throughout the kernel, but are respectively located in different parts of it; the white starchy portion being in the center, while the vital and also darker elements are between this white center and the thin outer husk; fourth, still further ignorance of the fact that these vital elements, those which specially feed the nervous structure, brain, &c., are never white in color, but are always much darker than the interior, and will not make white flour under any circumstances. The following illustrations show these facts as revealed by the microscope, and further on will be shown why these several elements are thus differently placed, and also their food value as revealed by modern chemistry.

The Structure of a Wheat Kernel, as Shown under the Camera Lucida of the Microscope.

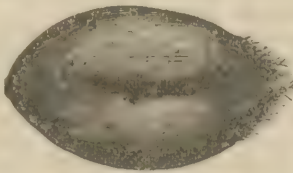


Fig. 1.

Fig. 1 represents a grain of wheat in its natural state, highly magnified. Notice the fibrous beard on the smaller end.

Fig. 2 represents a grain of wheat in part, also highly magnified, after it has been thoroughly prepared for reduction into *Fine Flour of the Entire Wheat*. Notice the husk and fibrous beard have been entirely removed.

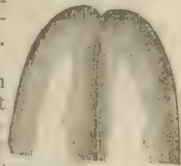


Fig. 2.

Fig. 3 shows a transverse section of a grain of wheat magnified to eighteen diameters. On the extreme outside is shown the husk, consisting of three extremely thin layers, which adhere so closely and firmly to each other that they may be regarded as one skin; next a layer containing some oil and albumen, and next a layer of cells containing GLUTEN. And then the central mass of the grain, composed of cells which are filled with granules of starch, with a small portion of gluten forming the cell walls. This peculiar structure will be better understood by reference to Fig. 4, which is a section much more highly magnified.

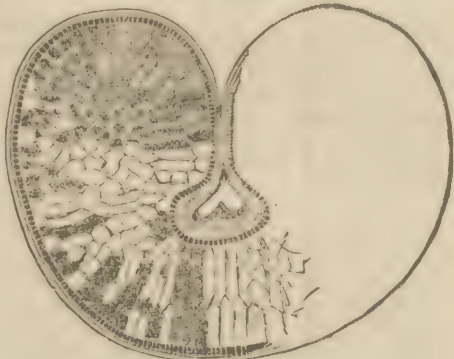


Fig. 3.

In Fig. 4 the several layers, 1, 1, 2, 3, 4, 5 and 6, illustrate the relative position of the several layers of a grain of wheat and the division of its food properties. 1, 1, 2, 3, and 4, constitute what is commonly known and designated as the bran in the ordinary forms of milling. 1, 1 and 2 represent the outer husk to which is attached the fibrous beard, and is composed of silex (flint) and woody fibre, is innutritious and indigestible; therefore unfit for the human stomach—it is acrid, absorbs moisture, is the source of mustiness and sourness in white and graham flours, and cracked and crushed wheats, promotes fermentation, and destroys the delicate flavor of any flour or wheat preparation that may contain it.

This husk is entirely removed in the manufacture of our *Fine Flour of the Entire Wheat*, leaving the food elements which are in 3, 4, 5 and 6, to be reduced to an even fineness, thereby producing the most perfect food possible to make from wheat.

Fig. 5 will give in one illustration a more complete and comprehensive view of the structure of a grain of wheat, and the relative positions of the various parts comprising it.

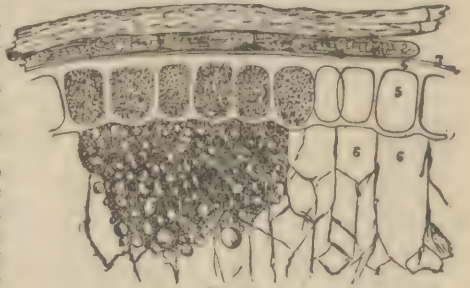


FIG. 4.

Nos. 1, 2, 3 and 9 constitute the outer husk and fibrous beard, which are entirely removed from the berry before the food elements are reduced to *Fine Flour of the Entire Wheat*.

Nos. 4, 5, 6 and 8 constitute that portion of the wheat wherein reside nearly all the mineral elements existing in wheat—those food properties so essential to build up and keep in repair the tissues of the body.

No. 7 represents the starch cells, and constitutes nearly seven-tenths of the entire berry. While starch contains those properties which, being burnt up in the system, produce the heat necessary for the performance of the other functions, yet it has no properties capable of building up the structure and tissues of the human system and repairing its vital wastes.

It will be understood from the above why the universal use of white flour is one of the most remarkable facts in the history of civilization—remarkable because it is the only impoverished food on the diet list. Over-boiled meats and vegetables are the only approach to impoverished food, and these the people know enough not to eat.

Remember, this *Fine Flour of the Entire Wheat* contains all the mineral properties of wheat, and is not an impoverished food,

and besides is best adapted for digestion and assimilation because of its even fineness.

The foregoing illustrations render it easier for those unfamiliar with the subject to see and understand why sound, plump wheat is taken and a flour made from it which looks nice and white, and yet will possess but feeble nutritive value in the most essential particulars; and, on the other hand, it will be just as easily seen why and how the same wheat may be taken, and be so treated in its preparation as to make of it this *Fine Flour of the Entire Wheat*—a food product of the highest nutritive value known to the world.

COLOR OF THE BREAD.

The color of the bread from our *Fine Flour of the Entire Wheat* is of a beautiful golden brown or bronze. It differs in shade, being lighter or darker, according to the kind of wheat of which it is made. Thus—white winter wheat makes the bread lighter in color; that made of red winter wheat is somewhat darker in color; and that from Minnesota spring wheat is darker than either of the winter wheats. Soil, climate, and character of the season in different localities also affect color in the same varieties of wheat, and it will show in this *Entire Wheat Flour*, as (unlike white flour) it takes its color from the mineral elements which give color to the wheat. We always endeavor to use uniformly the same wheat, whether winter or spring; but we cannot obtain it all from the same farm or locality—it is, however, always of the first quality, and the flour in all cases embodies all the food elements. The foregoing will explain to consumers any difference in color of the bread they may at any time notice from different packages of flour—besides, on each of our packages of all sizes, is stated the kind of wheat its flour is made of.

THE TESTIMONY OF CHEMISTRY AND PHYSIOLOGY.

In Johnson's "How Crops Grow," (Orange Judd & Co., N.Y. city,) will be found that in 1000 parts of substance
 Wheat has an ash of.....17.7 parts.
 White Flour has an ash of 4.1 parts—an impoverishment of about $\frac{1}{4}$.
 Wheat has..... 8.2 parts phosphoric acid.
 White Flour has..... 2.1 parts phosphoric acid—an impoverishment of about $\frac{1}{4}$.
 Wheat has..... 0.6 parts lime and 0.6 parts soda.
 White Flour has..... 0.1 parts lime and 0.1 parts soda—an impoverishment of 5-6 in lime and soda each.
 Wheat has..... 1.5 parts sulphur—White Flour has no sulphur.
 Wheat has..... 0.5 parts sulphuric acid—White Flour has no sulphuric acid.

Hundreds of other analyses, made by different chemists, both in Europe and America, at different times and upon different wheats, could be given if space allowed, in corroboration of the above.

A distinguished physician of Massachusetts, in a lecture before the New Hampshire Medical Society, states how the foregoing facts were first brought to his knowledge. He says:

"I became alarmed at the decay of my children's teeth—I queried dentists and others as to the cause, and settled down to the conclusion that there was something wrong in the bony elements of their food. Subsequently Dr. Nichols, editor of the Boston Journal of Chemistry, brought to my notice some comparative chemical analyses of wheat and flour, showing the great deficiency in the latter in mineral ash. I was then using in my family a celebrated brand of flour called "Peerless." I took this flour to one State Assayer, Prof. Sharples of Boston, and had him analyze it. He reported withdrawal of 75 per cent. of the mineral ash in wheat." And he further says, "I still think that, had I not had this analysis made and paid for it, I should not have been so thoroughly convinced as I now am, of the terrible impoverishment in flour."

Dentists, whose addresses we have, report as within their observation a marked change from the chalky, soft solid condition to the firm, fibrous tough texture of the dentine, the arrest of decay of teeth, etc., by a change in diet from white flour to that of all the wheat—in some instances the change has been observed in the space of only three months. In the report of the Scientific Commission of the United States to the Vienna Exposition, published by our government, upon VIENNA BREAD, Prof. Horsford, the following is stated:

"The peasantry of Austria and Hungary, and indeed of Europe in general, prefer their bread made from the whole meal, because of its nutritive value—because the laborer can be sustained on such bread, and cannot on the white. The consideration of these conditions led the late Baron Liebig to remark as follows:

"The significance of the nutritive salts in food is sufficiently well known to physiologists; it is known that without their co-operation the other constituents of food are incapable of affording nourishment. By simple washing of fresh or boiled meat with water, which extracts the nutritive salts, it would become incapable of serving in the preservation of life; the nutritive salts of wheat are identical with the nutritive salts of meat, and one understands that what is true for meat is also true for bread, and that the nutritive value of flour is less in the same proportion as it contains less of the nutritive salts than the grain. The nutritive salts of meat and wheat are phosphates, and consist of compounds of phosphoric acid with potassa, lime, magnesia and iron; the simple relations of the quantity of these substances contained in wheat and flour, as shown by chemical analysis, will be sufficient to make obvious the difference in nutritive value of the two, etc. These phosphates are indispensable to the nutrition of all higher organizations. They enter into and constitute a part of, not only the bones, but every muscle, every nerve tissue; and in each secretory organ there seems to be a special accumulation, to be employed in the elaboration of the products which are secreted."

If you value good health, and that of those dependent upon you—especially your children—always buy your flour with the fullest possible knowledge of its value for what you want of it—i. e., FOOD. The real question is, which has the most and highest nutritive value, and will make the most pounds of bread—and not which is the lowest in price.

Some of the Reasons why People should use this Flour as their Bread Food, and why its use is so Conducive to Vigor and Vitality.

It is the first time in the history of flour that ONLY the TRUE FOOD BRAN—the INNER FOOD INTEGUMENT of the wheat has been reduced in a flour to equal fineness with the softer and whiter portions of the kernel, thus incorporating in the flour, without any of the extraneous woody indigestible part, all the food properties of wheat in their purity and natural proportions. A great point is thus gained in having the normal amounts of mineral and starch food in the flour God designed man should get when he ate wheat, and to have it in that evenness of division known to be best adapted to digestion and assimilation.

Flour deprived of the *gluten* of the wheat, under which general name may be classed the phosphatic and nitrogenous elements which are stored principally between the outer wraps and the inner starch body of the kernel, has lost the greater part of its blood-making materials. This gluten of wheat may be compared to the lean of meat, while the whiter starchy portions of the wheat may be compared to the fat of meat. Starch is carbon and fat is carbon—while animal and vegetable albumen, or gluten, are nearly identical substances.

While this comparison is not wanting in scientific accuracy, it is not wholly true in its application to white flour: for milling processes do not and cannot entirely exclude the nitrogenous elements from it, but that they do exclude the greater part, as well as all but a trace of the organized mineral constituents, is a simple chemical fact. If then we should attempt to live upon the fat or carbon, to the exclusion of the lean or nitrogen, of meat, we should soon discover by our weakened bodily and mental vigor that we were very imperfectly nourished. The same lack of vital force would come from our exclusive use of the vegetable carbons. The excessive use of the fat of grain—the starch—demands the most earnest consideration of the physiologist, because refined taste instinctively shrinks from the copious use of animal fats, while the education, custom or habit the present generation have been bred into, all tend

to encourage instead of counteract the unceasing and unlimited use of the starch form of carbon.

We know that starch contains no phosphorus, and that starch is all carefully preserved in flour, because of its whiteness, a whiteness that is foreign to the gluten. We know, also, that the starch in the interior of the wheat berry is nearly barren of minerals, containing less than one-half of one per cent., while the gluten is found to contain over eleven per cent. These vital mineral elements contained in the gluten of wheat are all demanded in the blood-making processes, and a flour that does not supply them is an impoverished food. The brain and the whole nervous structure make a special demand for phosphorus when actively at work. It is the great pabulum of nerve force; the flour, therefore, should contain this substance, else all the nerve centers of the system are not properly nourished, and cannot perform their best work, and the brain itself becomes incapable of great and long continued achievement.

These are incontrovertible facts—they are not the discoveries of any one man; they have come out of the wonderful alembic of modern chemistry.

Every man, woman and child should use this *Fine Flour of the Entire Wheat* for the following reasons:

FIRST—FOR ECONOMY.—The ash of wheat, according to Johnson, is 17.7 parts in 1000 of substance, and the ash of white flour being 4.1, it is evident that in eating white flour, in order to get the proper amount of mineral food found in wheat, one must eat four times as much flour as wheat—or, in other words, one has to buy four barrels of white flour to get as much mineral food as he would get from one barrel of *Fine Flour of the Entire Wheat*, and in so doing taxes his stomach to digest four times as much starch as nature intended he should to get the necessary amount of vital food. So that the white flour eater spends four times the money the wheat eater does. This has been found to be practically the case. It is, then, the truest economy to use this *Flour of the Entire Wheat*. It is also a great saving of nerve force, a vast amount more than is necessary being required to digest the starch which is so largely in excess in white flour.

SECOND—FOR HEALTH.—The excess of starch just named renders diseases that depend upon fatty degeneration more likely to occur. Take apoplexy, depending upon the atheroma of the cerebral arteries. This atheroma is a fatty degeneration of the muscular coat of the artery. Under the microscope the atheromatous matter presents fat globules and crystals of cholesterine. When the vessels are weakened by this degeneration they rupture and allow the blood to exude. This exudation presses upon the brain, and the effect varies with the site of the pressure. If at a vital point, death ensues. The fattening of animals by starch in excess shows that the muscular tissues are infiltrated with fat, so that the white flour eater is putting himself in just the condition to have fatty degeneration of his vascular tissues, because he has to eat four times as much starch as he needs. The sources of Bright's disease of the kidneys and of weakened and ruptured heart, lie in the same turning to fat of the tissues. Now apoplexy, Bright's Disease and heart disease are very common. Why not, then, use a food which contains the mineral elements without this excess of starch, and thus avoid this fatty diathesis.

THIRD—FOR SOUND TISSUES.—Two-thirds of the children under ten years of age in every civilized community are found with diseased teeth (see reports and statistics of Massachusetts Boards of Education). Among the Indian children of the same age, in the Indian Territory, an unsound tooth is the exception, not the rule. Moreover, cases have been furnished by dentists in which disease in the teeth has been repeatedly arrested, the enamel thickened, and the dentine (under the enamel) hardened, simply by leaving off the use of white flour and substituting preparations of the entire grain. Two years have thus effected remarkable changes in teeth. Now, if strong tissues like the teeth can be renovated by using articles like this *Fine Flour of the Entire Wheat*, what chances for the better may not be made in the softer tissues? It is probable our bodies entirely change in less than seven years' time. Why, then, have diseased teeth, when this pure and natural product of the entire wheat will give the mineral food for sound teeth?

FOURTH—THE WHITE PART OF THE WHEAT IS A VERY POOR FOOD.—Majendie fed dogs on white flour, and the animals died of starvation in forty days. He fed other dogs at the same time on bread of the entire wheat, and these dogs thrived and grew strong. Judge Abbot refers to a ship at sea on a long voyage, when all provisions gave out except white flour—the effect was disastrous in the extreme. Dr. Hammond of New York city tried to live on starch; he tried it for ten days and his friends stopped him for fear he would be killed. A man may walk from San Francisco to Boston with nothing but sound wheat for food, without impairment of strength or vigor, but he could not perform one-fourth the journey on white bread alone. The old Roman soldier in the days of Julius Caesar—the type of the most vigorous manhood the world ever saw—lived mainly on wheat. History has shown wheat to be the royal grain. Dr. Nichols, editor of the *Boston Journal of Chemistry*, says he “ENTERTAINS THE PROFOUNDEST RESPECT FOR A GRAIN OF WHEAT, AS IT IS A MOST MARVELLOUS COMBINATION OF SUBSTANCES, ADMIRABLY ADAPTED FOR THE BUILDING UP AND SUSTENANCE OF

THE TISSUES OF THE HUMAN BODY." When he says this, he includes *Flour of the Entire Wheat*, which is nothing but the food substance of the wheat reduced to an even powder without injury to, or subtraction of, a single food element, and hence a food as perfect as the wheat itself.

FIFTH.—WHITE FLOUR HAS NO SULPHUR.—This *Flour of the Entire Wheat* has 1.5 parts of sulphur in 1000 parts of substance. Hair has 3.5 to 7.3 per cent. of sulphur. If food contains no sulphur we should expect the hair to suffer, and we should see premature gray hair and baldness. Hon. E. P. Smith, late commissioner of Indian Affairs, says that he never saw a bald-headed Indian. It is therefore probable that defective hair is in part caused by the universal use of white flour diet. Pigs fattened on the sweepings of the flour mills, have been found to have the white bristles useless to the brush makers. It is better to eat this flour, which contains the normal amount of sulphur.

SIXTH.—NURSING WOMEN will find this *Flour of the Entire Wheat* an invaluable food, increasing the quantity and improving the quality of the lacteal secretion. It is natural to expect this, as dairymen feed their cows upon the tegumentary portion of the wheat rejected in making white flour. This deficiency of lacteal secretion is one great cause of infant mortality, and is one of the most fertile causes of anxiety to the anxious physician.

SEVENTH.—FOR CONSTIPATION this flour is the natural remedy and preventive, as it gives the ganglionic nerve centers of the intestines their proper food, and hence enables them to preside over the functions of the digestive organs. The use of this *Flour of the Entire Wheat* has shown that the healing and regulating effect is not due to the mechanical and irritating effect of coarse bran particles of the wheat, which is simply catharsis, but entirely to the fact that phosphorus is generously furnished to the nerve centers.

EIGHTH.—People use the white flour of commerce because they are born into the idea that it must be white to look nice. There is no principle of physiology which bases the qualities of food upon a white color. Color is a sentiment. Food to be good must contain all the elements of the tissues the body feeds upon. It does not say it must be white. This preference for white flour comes altogether from habit and false education—for those who eat bread and other food from this *Flour of the Entire Wheat* soon begin to love it, and in a short time experience a natural craving for it which white bread does not satisfy. And the light brown color of the bread, with its rich wheat flavor, is a constant reminder that the life and sustenance is not driven out of it, while its satisfying and nourishing qualities attest that it is the perfection of hale and healthful food.

NINTH.—FOOD determines the character of the tissues, of the constitution, and of being. If you eat poor food, you weaken the vital tonicity, and render the system liable to disease. It is as if the farmer withdrew three-fourths of the fertilizers from his crops, when one feeds upon the white part of the wheat. If plants are deprived of proper mineral food they don't flourish; so it is to be expected with people who feed upon white flour impoverished of the mineral constituents. The Prute Indians fed on white flour rapidly deteriorate; why should not the white people?

FINALLY.—It is time people paused in this devitalizing system of impoverished white flour eating, and began to intelligently consider and weigh the consequences it is silently but steadily entailing, not only upon themselves but upon their children and their children's children. With such a natural and nourishing food as this *Flour of the Entire Wheat* within reach, it is a cruelty to feed children upon white flour, entailing imperfect development and physical degeneration upon them, as well as disease. Liebig long ago predicted that this excessive starch flour eating would result in disaster to the race, the truth of which is now being plainly seen in many directions, in the changes of the types of disease from strong to weak—in the almost universal exhaustion of nerve force, which never before in history was so taxed as by the American people—in the great prevalence of nervous diseases—in the sudden breaking down of persons apparently in the full tide of health and vigor—in the worn and wearied look of the people, especially the women, as can be seen by scanning the faces of any public assembly. It is a beseeching look—an appealing cry for something they lack. Well! it is hard work to fight the battle of life on only twenty-five per cent. of nerve food.

THE FRANKLIN MILLS COMPANY

Can at all times be relied upon to make this Flour only from the best wheat, and they will warrant every package of it to be first, last and all the time exactly as herein represented.

Consumers, therefore, anywhere and everywhere, may, in purchasing, feel entire confidence that the brand upon their barrels and packages of "Fine Flour of the Entire Wheat," with the four W's, is an unqualified guarantee of their original contents.

DIRECTIONS FOR USING FINE FLOUR OF THE **ENTIRE WHEAT.**

NOTE.—IN NO CASE MIX A STIFF DOUGH.

It takes less of this than of white flour to make a loaf, because it is richer in gluten—that peculiar property in wheat which gives to flour its strength and bread making qualities, and determines its food value. This flour absorbs more moisture in baking, hence the dough must be soft. It should never be mixed stiff enough to knead with the hands. About one part of liquid to two parts of flour (by measure) is the proper proportion. Sweetening is more a matter of taste than necessity in bread making, and the amount may be increased or diminished as the taste of different persons requires. Either sugar or molasses may be used, but the latter tends to keep the bread moist and is preferred on that account. Potato yeast is preferable. It is a good plan to sift flour twice, this mixes the air with it and makes bread or gems lighter. A little experience and observation will soon render it unnecessary to refer to the recipe.

FOR BREAD.—One quart lukewarm water, 2 tablespoonsful shortening (butter preferred), $\frac{1}{2}$ cup New Orleans molasses, 1 yeast cake dissolved in part of the water, (or $\frac{1}{2}$ cup potato yeast, using a little less water), 1 teaspoonful salt, 2 quarts flour and a little soda if you like. Stir well together, let it stand over night in a moderately warm place to raise. In the morning stir well together again, put it in pans to raise, and when light enough bake in a hot oven. This makes two loaves.

FOR GEMS.—One pint sweet milk, 1 quart flour, 1 tablespoonful melted shortening, 1 tablespoonful sugar, 3 teaspoonsful baking powder, salt. Grease the pans, and heat very hot. Then put in dough and bake for twenty minutes. If you bake more than you want for a single meal, steam the remainder for the next, as they are delicious treated in this way.

FOR MUFFINS.—Sift flour twice to fill with atmospheric air. Beat together one egg, one teaspoonful of salt, one tablespoonful of sugar; add one quart of milk, and one half pint of water. Beat while sifting in the flour, and make to the consistency of drawn butter.

Have iron roll pans *hot* and bake in a *hot* oven.

The above fills two roll pans.

FOR GRIDDLE CAKES IT IS FAR SUPERIOR TO BUCKWHEAT FLOUR.

It does not produce the injurious, heating and irritating effect which always results from the continued use of Buckwheat.

Buckwheat mixed with one-half Entire Wheat Flour is improved 100 per cent. The cakes are light, tender, palatable, more healthful and much improved in flavor.

It is superior to White Flour for mixing with Corn Meal, as it makes a lighter griddle cake and greatly improves its flavor.

INFANT AND INVALID FOOD.—"Dry thoroughly in a warm oven slices of light sweet bread made of Fine Flour of the Entire Wheat; pound them fine in a mortar or roll them fine on the bread board, pass through a fine sieve and with the flour thus obtained thicken boiling milk."

This will be found an invaluable food for nervous and teething children, superior to specially prepared package foods and can be prepared at a tithe of their cost.

Bread treated in this way and broken up coarse is delicious when made into Puddings, Cakes, &c., or eaten with milk. It is then in character the same as Granula or Universal Food, and the consumer has the satisfaction of knowing of what it is made, that it is fresh and costs comparatively but a trifle.

BREAD FOR DYSPEPTICS.—Take bread 48 hours old, slice it; put into a deep dish, cover it tightly, and warm it in an oven. The latent moisture retained in the gluten will soften the bread, improve its flavor and render it easy of digestion.

MANUFACTURED ONLY BY THE

FRANKLIN MILL CO., - LOCKPORT, N. Y.

FINE FLOUR OF THE ENTIRE WHEAT IS THE COMING FLOUR.

Manufactured only by THE FRANKLIN MILL COMPANY, Lockport, N. Y.

WHAT IT IS.

IT IS A FLOUR OF THE ENTIRE WHEAT KERNEL, except the woody, innutritious, indigestible outer skin or husk, which is not a food. This husk is first removed, and then the entire food part of the kernel is reduced to an evenly fine and perfectly homogenous flour—a condition essential to the easiest and fullest digestion, and the most perfect assimilation into the system.

No Millstones being used, the product is manufactured cold—hence, there is no chemical or other injury to the Starch, Gluten, Mineral Salts or Phosphate elements of the grain, and they are all preserved in the flour in just the same purity and proportion that nature stored them in the wheat.

IT IS UNLIKE WHITE FLOUR,

Because, White Flour is robbed of the precious Phosphates, Mineral Salts and the greater part of the Gluten, in the wheat, in order to make a White Bread. These essential and valuable food properties are preserved in Fine Flour of the Entire Wheat, notwithstanding they give color to the Bread, in order to supply food that will build up and repair, nourish and sustain the bones, muscles, nerves and working tissues of the body. "Color is a sentiment and of no food value;" "We neither eat nor digest with our eyes."

The color of the Bread from our *Fine Flour of the Entire Wheat* is of a beautiful golden brown or bronze.

CAUTION—Consumers can safely look with suspicion upon any flour that makes a white bread claiming to possess all the mineral properties of the wheat.

It is Unlike Graham Flour or Wheat Meal,

In that it does not contain the coarse, irritating, indigestible Woody outer Husk of the Wheat Kernel, or coarse flakes of bran which are of no food value, and for which purchasers of Graham pay full flour price at the rate of from seventy-five cents to one dollar per barrel, even in the choicest brands of Graham. Every pound of Fine Flour of the Entire Wheat represents a pound of food value; it also *differs from Graham Flour or Wheat Meal*, in that it is easy of Digestion, perfect in assimilation and thoroughly nourishes every part of the body. Graham Flour on account of the presence of the coarse bran particles, is irritating to weak stomachs; acts as a cathartic, and passes food out of the stomach before it has time for digestion and assimilation, and by its mechanical action uses up the nerve force required to digest it without in turn, properly nourishing the nerve centers that preside over the Organs of Digestion, thus weakening the tonicity of the system, instead of strengthening it.

FINE FLOUR

OF THE

ENTIRE WHEAT

Makes Delicious, Light, Spongy Bread, Gems, Waffles, Muffins, Doughnuts and Griddle Cakes. Can be used for all purposes the same as is White Flour. See Recipes. [OVER]

FOR THE FIRST TIME IN ITS HISTORY

UNDER THE TEACHINGS OF

MODERN CHEMISTRY AND PHYSIOLOGY,

Wheat is taken, and justice is done to its wonderful food properties, by preserving them all in a FINE FLOUR OF THE ENTIRE WHEAT, that will build up and repair, nourish and sustain, every bone, muscle fibre and function of the human system from infancy to old age.

It is made from sound and well-ripened wheat, as such wheat only contains the full complement of bone, muscle, brain and nerve food. It is made by processes specially designed for its production, and without which its production is impossible. It is so rich in flavor, palatability, and nourishment, that only a few weeks regular use of it, suffices to make all other bread taste flat, insipid and unsatisfying. Place the bread before your children daily; their taste not being vitiated by habit, they will soon show you that it is a natural, wholesome, and healthful food.

FACTS SHOWING ITS ACTUAL FOOD VALUE.

1. *It is the cheapest flour ever known*, as it will make more pounds of bread from the same weight of flour, and give more food value for the same money than any flour in the world.

2. It will relieve consumers in their bread eating from excessive starch eating. *Starch produces fat.*

The excess of starch just named renders diseases that depend upon fatty degeneration of the vascular tissues more likely to occur. The sources of BRIGHT'S DISEASE, DIABETES, APOPLEXY and of weakened and ruptured heart, lie in the same turning to fat of the tissues.

3. *For Dyspepsia, Indigestion and Constipated Habit*, it is an invaluable remedy—for proper diet is indispensable for relief. The even fineness of the tegumentary part of the wheat prevents irritation and promotes digestion, as it is in the best form and condition for the gastric juice to act upon, while because of its fulness as a natural and complete phosphatic food, it furnishes the power to digest by generously feeding the ganglionic nerve centers which preside over that most important function.

4. It is also for the above reasons a natural and complete remedy for constipation—no matter of how long standing, and will promote healthy peristaltic action.

FOR INFANTS AND CHILDREN.

5. It is a most valuable food, as has been proved by large experience of physicians who have paid special attention to this department of nutrition. It has been found, when properly prepared with milk, superior to all the specially prepared package foods, and at a tithe of their cost. It will supply the child with just the material for real growth and sustenance, furnishing sound teeth, strong eyes, full development, and will build up a strong and vigorous constitution.

FOR THE BRAIN WORKER.

6. It is unequalled as a food, being peculiarly rich in the phosphatic properties upon which the brain and the whole nervous structure make special demand when actively engaged, and without which the brain is incapable of its best work.

It is food for the muscle worker, as it is exceptionally rich in the nitrogenous and phosphatic elements necessary as the sustaining force in all labor. It is the food for the weak, debilitated, the worn out and the nervous; for the sick and the well; for the young and the old.

THESE ARE NOT IDLE STATEMENTS,

They are established facts, appreciated where known: to be further appreciated as the flour becomes further known by use—and their verification can be made in any family that will regularly use it for the short period of a month.

WHAT CONSUMERS SAY OF IT.

Enclosed find check for bill of the 10th, which reached us three or four days since. The flour is just the thing for everybody.

ROBT HAMILTON, M. D.,
Medical Institute, Saratoga Springs, N. Y.

My only wonder is that everybody does not use this flour in preference to all others, when they know where to obtain it. Yours most truly,
J. MARION SIMS, M. D., L. L. D.,
265 Madison Ave., New York, N. Y.

We have been using the Franklin Mills "Fine Flour of the Entire Wheat," and have found it superior to "Graham," and much better adapted to the wants of the system. "The bread is light and sweet, and I can recommend it as superior to any flour we have ever used."
S. N. BRAYTON, M. D.,
202 Delaware Ave., Buffalo, N. Y.

I have had your "Entire Wheat Flour" in use in my own family, and have also introduced it into the families of many of my patients. I am greatly pleased with it. Please accept my thanks for your efforts in introducing to the public so pure and healthful an article of food. Yours truly, &c.,
J. H. SALISBURY, M. D.,
326 Euclid Ave., Cleveland, O.

It may take some little time to make your product known and understood, but if you keep on making the best article that can be made by your process, and treat your customers fairly, you ought to supply every family, school and hospital in the land.
T. T. SEELYE, M. D.,
Cleveland Sanitarium.

I have been using the flour for some time and like it very much. Our family agree that it is much superior on every account to the so-called Graham flour. It has almost entirely taken the place of other kinds of bread on our table. We prefer it as a matter of taste, and as being much better for health.
REV. GEO. B. GOW, Brattleboro, Vt.

I have made a test with this flour and the best St. Louis flour, and the result was eighty pounds more bread to the barrel in favor of the Entire Wheat Flour. I am satisfied that none but the best wheat is used in its manufacture, and its great strength must make it an exceptionally valuable food.
JOHN BERRIE, Baker,
Vt. State Asylum, Brattleboro.

As an artificial food for infants the Franklin Mills Fine Flour of the Entire Wheat, made into a thin gruel, will agree with infants better than any one article of diet I have ever used.
A. J. EVANS, M. D., Lockport, N. Y.

BOSTON, Jan. 18, 1881.
GENTS—Your Entire Wheat Flour I have used in my family for some time, and am much pleased with it. I recommend it to my patients, for it contains the right elements (gluten) in proper proportions to make good teeth, muscles and brains.
Very truly,
G. B. HARRIMAN, D. D. S., M. D.

The half-barrel reached here promptly, and it more than meets our expectations, makes the most delicious water bread (or gems) I ever tasted. All friends who have tasted are of same opinion. Shall use every effort to induce friends to use it, if kept up to its present standard of excellence. You perform a genuine use to humanity in its production.
A. S. HUNT,
155 E. 76th St., N. Y. City.

It is a pleasure to me to speak a right royal good word for your unwashed Fine Flour of the Entire Wheat. It makes a light, sweet, wholesome bread, that represents the entire nutritive qualities of that noblest of all the cereals—Wheat. The nitrogenized elements are as perfectly preserved as the glucose and starch, rendering it most healthful for all dyspeptics. It has been used by my patrons for the nourishment of infants, with complete success where I should not have dared to recommend it, in the place of Mellin's Infant Food, Papoma, Imperial Granum, Sago or Farina. I believe its popular use will do much to promote the health and strength of the community, particularly of clerks, students and muscular laborers.
SIMEON TUCKER CLARK, A. M., M. D.,
Lockport, N. Y.

As we have given this "Fine Flour of the Entire Wheat" a thorough trial, and are now using it, we unqualifiedly place it at the head of any flour we have ever used. It is light, sweet and toothsome, and we all give it the preference over any other bread we have ever eaten.—*Boston Journal of Commerce.*

The Franklin Mills Co., Lockport, N. Y., are offering to the public a new flour, and we have chosen both to use it in our institution and to advise our patrons to use the flour from these mills. We believe this "Fine Flour of the Entire Wheat" will take its place as the first in the market, and as such we recommend it.—*Laws of Health.*

In conclusion, we are forced to the belief that neither superfine white flour, nor what is commonly termed Graham flour, is a representative food—but in the "Fine Flour of the Entire Wheat," we really have a representative food, a general demand for which must arise as a knowledge of its value spreads among the people.—*Extract from an article on Whole Wheat Flour by Prof. W. N. Ferris.*

We have been using Fine Flour of the Entire Wheat, manufactured by the Franklin Mills Co., Lockport, N. Y., for three months, and I do not hesitate in expressing the opinion that one barrel of it is actually worth more to my family than two barrels of ordinary flour. Bread made from it is perfectly irresistible, and aside from its richness and sweetness to the taste, we find it more nutritious and healthful than any other article of food. I am not subject to "ecstasies" over newly discovered preparations for the table, but this is certainly a desideratum well worthy of commendation.
REV. A. B. WOODWORTH,
Newark, N. J.

The American Medical Weekly, published by E. S. Gaillard, M. D., L. L. D., New York city, issue January 7th, 1882, contains an able, interesting and instructive illustrated article entitled, "Cereal Foods Under the Microscope," written by Ephraim Cutter, A. M., M. D., Harvard and University of Pennsylvania, Principal of the Medical Department of the American Institute of Micrology, author of "The Clinical Microscope," and other medical and scientific papers. The object of the paper is to place before physicians and the public in their true light, as revealed by microscopic and scientific investigation, the real value of the many cereal foods which are advertised and offered for sale, and recommended as especially adapted for the promotion of health and prolongation of life.

In order to make the subject clear and comprehensive to the reader, the author made a careful microscopic examination of forty-four different brands of cereal foods, including Patent, New Process, Superfine and Entire Wheat Flour, Wheat Meal, Graham, Cold Blast, Gluten Flour, and several of the leading advertised Infant foods, and the result of these examinations are clearly presented in microscopic drawings made by Dr. A. T. Cuzner, of New York city, one of the most competent and skilled artists in that department of scientific art.

Chief among the 44 products examined by Dr. Cutter and illustrated by Dr. Cuzner, magnified 800 times, is mentioned Franklin Mills Fine Flour of the Entire Wheat, Manufactured only at Lockport, N. Y., with the following comment: "The field is filled with gluten cells. Repeated examinations prove this to be the best flour examined. So long as the makers maintain such a proportion of gluten cells they confer a blessing on mankind. It produces a light, spongy bread. It is a reliable infant's food."

Dr. Gaillard commenting on Dr. Cutter's report, says: "In the study of Cereal Foods it is only necessary to remember that the gluten of such foods is their nitrogenized element, the element on which depends their life sustaining value, and that this element is in the white and foolishly and fashionably flour almost entirely removed, while the starch, the inferior element, is left behind, and constitutes almost entirely the bulk and inferior nutriment of such flours. To use White Flour from which the gluten (in the bran) has been removed, is almost criminal; that it is foolish and needless, needs now no further demonstration."

Dr. Alfred K. Hills, editor of the New York Medical Times, (issue March, 1882) in an article entitled "Cereal Foods under the Microscope," commenting on Dr. Cutter's report, adds his testimony as follows:

"We have also found the 'Flour of the Entire Wheat,' as ground by the Franklin Mills Co., Lockport, N. Y., a most valuable food for infants, as well as the best cereal food for adults. This flour of the Whole Wheat is the 'Nutrient par excellence,' and should supplant the ordinary White Flour (which contains starch alone and is consequently imperfect as food) in our daily consumption."

Abraham Jacobi, M. D., President of the New York State Medical Society, in his anniversary address, delivered Feb. 8th, 1882, commenting on Dr. Cutter's report above referred to, says: "His researches naturally refer mainly to the proportion of Gluten to Starch. I wish the brief article of his would be distributed in a hundred thousand copies, reprinted in every secular paper, read from every platform and pulpit in the land."

We have taken pains to thoroughly test this flour, and are using it at the Sanitarium with the most satisfactory results. Its merits are all that is claimed by the manufacturers.—*Good Health.*

ELMWOOD HALL, SARATOGA SPRINGS, N. Y.
Franklin Mills Co., Lockport, N. Y.

Our guests are highly pleased with your Fine Flour of the Entire Wheat. I have been a user of Graham Flour for nearly thirty years. I think this is far superior to the best Graham.
EMORY POTTER.

MIDDLETOWN, Conn., Feb. 21, 1882.
Franklin Mills Co., Lockport, N. Y.

Having proved the qualities of your Fine Flour of the Entire Wheat, am prepared to say that it makes delicious bread cake and fried cakes, answering fully the large claims you make in regard to the flavor and sweetness of the food made from it. I am also prepared to accept your statements in regard to its chemical constituents and real food value. I think the experience of every physician is that dyspeptic troubles and nervous diseases are constantly on the increase, the latter alarmingly so. These conditions are, I believe, largely due to the starved condition of the nerve centers, resulting from the elimination from White Flour of those elements so essential to nerve strength. I apprehend the greatest objection which will be made against your flour is the dark color of the bread made from it, but this objection ought not to prevail with persons who have in view their own health or the health of their offspring.
D. A. CLEVELAND, M. D.

BRITISH CONSULATE, BOSTON, March 2, 1882.
The Franklin Mills Co., Lockport, N. Y.

GENTLEMEN—I have given your Flour of the Entire Wheat what I consider a fair trial, and feel satisfied that it is what I had long been trying to procure here, viz.: a Flour retaining all the pleasant flavor and nutritive qualities of the grain. In England, where a large part of the population live almost entirely on bread, a society of Philanthropists are endeavoring to encourage and promote the use of a similar flour, and to convince the people of the advantage of substituting bread made from it for that made from the tasteless and unwholesome Flour which has nothing but its color to recommend it. It is of vital importance that those in health should endeavor to preserve their health and strength, and that those of weak digestion should obtain proper nourishment from the smallest possible amount of food. I therefore feel confident that the use of such Flour as yours will be generally adopted as its qualities become known, and it is found to possess the qualities which are claimed for it.
C. A. HENDERSON,

DIRECTIONS FOR USING

FINE FLOUR

OF THE

ENTIRE WHEAT.

NOTE.—IN NO CASE MIX A STIFF DOUGH.

It takes less of this than of white flour to make a loaf, because it is richer in gluten—that peculiar property in wheat which gives to flour its strength and bread making qualities, and determines its food value. This flour absorbs more moisture in baking; hence the dough must be soft. It should never be mixed stiff enough to knead with the hands. About one part of liquid to two parts of flour (by measure) is the proper proportion. Sweetening is more a matter of taste than necessity in bread making, and the amount may be increased or diminished as the taste of different persons requires. Either sugar or molasses may be used, but the latter tends to keep the bread moist and is preferred on that account. Potato yeast is preferable. It is a good plan to sift flour twice, this mixes the air with it and makes bread or gems lighter. A little experience and observation will soon render it unnecessary to refer to the recipe.

For Bread.—One quart lukewarm water, 2 tablespoonsful shortening (butter preferred), $\frac{1}{2}$ cup New Orleans molasses, 1 yeast cake, dissolved in part of the water, (or $\frac{1}{2}$ cup potato yeast, using a little less water), 1 teaspoonful salt, 2 quarts flour and a little soda if you like. Stir well together, let it stand over night in a moderately warm place to raise. In the morning stir well together again, put it in pans to raise, and when light enough bake in a hot oven. This makes two loaves.

For Gems.—One pint sweet milk, 1 quart flour, 1 tablespoonful melted shortening, 1 tablespoonful sugar, 3 tablespoonsful baking powder, salt. Grease the pans, and heat very hot. Then put in dough and bake for twenty minutes. If you bake more than you want for a single meal, steam the remainder for the next, as they are delicious treated in this way.

For Muffins.—Sift flour twice to fill with atmospheric air. Beat together one egg, one teaspoonful of salt, one tablespoonful of sugar; add one quart of milk and one half pint of water. Beat while sifting in the flour, and make to the consistency of drawn butter.

Have iron roll pans hot and bake in a hot oven.
The above fills two roll pans.

FOR GRIDDLE CAKES

It is Far Superior to Buckwheat Flour.

It does not produce the injurious, heating and irritating effect which always results from the continued use of Buckwheat.

Buckwheat mixed with one-half Entire Wheat Flour is improved 100 per cent. The cakes are light, tender, palatable, more healthful and much improved in flavor.

It is superior to White Flour for mixing with Corn Meal, as it makes a lighter griddle cake and greatly improves its flavor.

Infant and Invalid Food.—"Dry thoroughly in a warm oven slices of light, sweet bread made of Fine Flour of the Entire Wheat; pound them fine in a mortar or roll them fine on the bread board, pass through a fine sieve and with the flour thus obtained thicken boiling milk."

This will be found an invaluable food for nervous and teething children, superior to specially prepared package foods and can be prepared at a tithe of their cost.

Bread treated in this way and broken up coarse is delicious when made into Puddings, Cakes, &c., or eaten with milk. It is then in character the same as Granula or Universal Food, and the consumer has the satisfaction of knowing of what it is made, that it is fresh and costs comparatively but a trifle.

Bread for Dyspeptics.—Take bread 48 hours old, slice it; put into a deep dish, cover it tightly, and warm it in an oven. The latent moisture retained in the gluten will soften the bread, improve its flavor and render it easy of digestion.

REMEMBER THIS.

Fine Flour of the Entire Wheat

IS MANUFACTURED ONLY BY THE

FRANKLIN MILL CO.,
LOCKPORT, N. Y.

IT IS PUT UP IN

BBLs. AND HALF-BBLs.,

And is Sold by

GROCERS IN SMALLER QUANTITIES.

See that you buy your flour only from packages bearing our Trade Mark 4 W's, and location, "LOCKPORT, N. Y.," on the brand.

Send for 8-page Circular.

FOR SALE BY

SCOTT & BOWNE'S SOLUBLE BEEF,

Peptonized and Granulated.

On account of numerous inquiries from Physicians for a concentrated beef containing all of the properties of the meat, in a form convenient for use and acceptable to the patient, we have performed a series of experiments, and finally after many months of discouraging trials have succeeded in accomplishing a most desirable result, and now have the satisfaction of presenting to the people and profession, a preparation of beef in a (granulated powder) form that will challenge comparison with all other beef preparations. It differs from them in the respect that they possess simply the flavor and stimulating properties of the meat, while the SOLUBLE BEEF prepared by us contains not only these but the albumenoids or nutritive substance of the meat in a convenient and palatable form, dissolving instantly in boiling water, possessing the delicious flavor of the best roast beef, and can be retained and digested by the most sensitive stomach.

Our Soluble Beef has been subjected to an exhaustive chemical analysis which we subjoin:

CHEMICAL ANALYSIS.

Moisture.....	8.8
Mineral Matter.....	21.3
Phosphoric Acid.....	4.7
Chlorine.....	5.1

ORGANIC SUBSTANCES.

Peptones.....	15.3
Albumen (Syntonine).....	1.3
Nitrogenous Substances, Gelatine, and Extractive Matter.....	53.3— 69.9

100.00

Messrs. SCOTT & BOWNE:

1030 PARK AVENUE, NEW YORK, December 4, 1881.

GENTLEMEN: Conforming with your request to examine your preparation "Soluble Beef," I have done so, and give you Chemical Analysis as above.

Owing to the difficulty of estimating peptones correctly in presence of such extractive matter as is contained in beef-tea, and especially when gelatine is present, I am only able to give an estimation of the peptones by an indirect method. A two-per-cent. solution of your Soluble Beef gives a deviation of the ray of light by polariscope of—48 minutes, or, calculated for the organic matter contained in your preparation,—37.5 spec. gyration. This is about one half of that of the pure albumen in the dry state; respectively it shows that your preparation contains about one half of albuminous substance, while beef extracts of Liebig's method contain none of this nutritive substance, as it does not gyrate whatever.

While your preparation embodies all the constituents of the ordinary Beef Extracts, there is a net gain of nearly 50 per cent. of nutritious protein substances in the soluble state; 22 per cent. is peptonized and available for immediate assimilation; while the accustomed Beef Extracts are either devoid of them or do not contain them in the dissolved state.

Your choice of the granulated condition is commendable for its insured keeping qualities, as well as from the economical standpoint of the buyer.

ADOLPH TOEPPE, P. D.

IN THE PREPARATION OF Scott & Bowne's Soluble Beef, PEPTONIZED AND GRANULATED,

The meat is selected from the choicest parts of the animal, and, by a process of our own, the soluble substance constituting the accustomed Beef Extracts, as well as a large portion of the otherwise insoluble meat-fiber, is dissolved and peptonized, ready for absorption without previous digestion of the stomach.

While the yield in the ordinary method of extraction is about 3 per cent., by our method it is 12 to 15 per cent.; in other words, for every three parts of the ordinary Beef Extract having only stimulating properties, there are 9 to 12 parts of dissolved nutritious matter present in our preparation, in addition to the stimulating properties common to other extracts. We beg leave to call your special attention to this fact, AS IN THIS OUR PREPARATION DIFFERS MATERIALLY from all other Beef Extracts now in the market.

We have found it impracticable to convert the whole of the meat substance into Peptones, for, if the process be carried on to a much further extent, the product acquires a nauseous character distasteful to a sensitive patient. While this disadvantage is strongly exhibited in all the so-called Beef Peptones now in the market, our Soluble Beef has the delicious flavor of freshly cooked beef, unequaled by any other meat extract.

In our preparation, the mineral matter contains free Phosphoric Acid, which is stimulating to the capillaries and enables them to assimilate the Phosphates so necessary to the healthy condition of the blood and tissues.

It contains all the nutritive and stimulant substances of the meat in a condition easily assimilated by the most feeble stomach.

One pound of our Soluble Beef contains the stimulant and nutritive substances of ten pounds of the finest meat, and will make as much beef-tea (and more delicious in flavor) as two or three times its cost in fresh meat.

We shall be happy to furnish samples free to all physicians upon application.

Put up in 1 and 1/2 pound Tin Cans. Retail price, 50 cents and \$1.

Sold by all Wholesale and Retail Druggists

The name of this preparation, as it appears on the label, is simply "SCOTT & BOWNE'S SOLUBLE BEEF." SO SPECIFY WHEN PRESCRIBING.

PREPARED BY

SCOTT & BOWNE, Manufacturing Chemists,

108 & 110 WOOSTER STREET, NEW YORK.

MELLIN'S FOOD,

For Infants and Invalids



The only perfect substitute for mother's milk. Recommended by the highest medical authorities in England and America.

A few years ago THE MEDICAL PRESS AND CIRCULAR, one of the foremost English Medical journals, published a very exhaustive report on Foods in England in which the highest place was given to Mellin's Food. A microscopical examination has now been made by Dr. Ephraim Cutter of all the prominent Infants' Foods in America. The result is the same.

The Highest Place is Accorded to Mellin's Food.

Dr. Jacobi of New York, says of Dr. Cutter's report :

"Some of his statements I shall refer to here, desiring to give them the greatest publicity. I wish that article of his would be distributed in a hundred thousand copies, reprinted in every secular paper, and read from every platform and pulpit of the land."

"Amongst the better preparations is MELLIN'S FOOD. It claims to be the only substitute for mother's milk and not farinaceous. It is not the *only* substitute, but, the starch *is* converted into dextrine."

A pamphlet containing analysis and description of Mellin's Food with useful hints to mothers sent free on application.

THEODORE METCALF & CO.,

Mellin's Food Department,

41 CENTRAL WHARF,

BOSTON, MASS.